Personal de Enfermería y Cuidados

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Contents

1.PROCESAMIENTO DE LOS DATOS.

- En primer lugar leemos el fichero:

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

- Realicemos una breve inspección de los datos

```
str(enfermeria)
```

```
## 'data.frame':    17100 obs. of  7 variables:
##  $ TIME              : int  2010 2010 2010 2010 2010 2010 2010 2010 2010 2010 ...
##  $ GEO               : Factor w/ 38 levels "Albania","Austria",..: 3 3 3 3 3 3 3 3 3 3 ...
##  $ UNIT              : Factor w/ 3 levels "Inhabitants per ...",..: 2 2 2 2 2 2 2 2 2 2 ...
##  $ WSTATUS           : Factor w/ 3 levels "Licensed to practice",..: 2 2 2 2 2 3 3 3 3 3 ...
##  $ ISCO08            : Factor w/ 5 levels "Nurses","Nurses and midwives",..: 3 2 5 1 4 3 2 5 1 4 ...
##  $ Value             : Factor w/ 5564 levels ":","1 000.23",..: 1 955 1 837 1 2294 1380 1 1284 1 ...
##  $ Flag.and.Footnotes: Factor w/ 9 levels "","b","bde","be",..: 1 1 1 7 1 1 1 1 7 1 ...
```

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

```
## [1] "TIME"               "GEO"                "UNIT"
## [4] "WSTATUS"            "ISCO08"             "Value"
## [7] "Flag.and.Footnotes"
```

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

```
## [1] 17100
```

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

```
## [1] 7
```

*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.
- **WSTATUS**: variable cualitativa. Indica el estatus laboral del personal de enfermeria y cuidados.
- **ISCO08**: Variable cualitativa. Indica si la variable "Value" se refiere solo a enfermero/as,matronas etc.
- **Value**: Variable cuantitativa. Indica el número y ratio de profesionales de enfermería por países.
- **Fal.and.footnotes**. Notas sobre etiquetas. Eliminamos esta columna.

*Años de las mediciones:

```
unique(enfermeria$TIME)
```

```
##  [1] 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
```

*Paises:

```
unique(enfermeria$GEO)
```

```
##  [1] Belgium
##  [2] Bulgaria
##  [3] Czechia
##  [4] Denmark
##  [5] Germany (until 1990 former territory of the FRG)
##  [6] Estonia
##  [7] Ireland
##  [8] Greece
##  [9] Spain
## [10] France
## [11] France (metropolitan)
## [12] Croatia
## [13] Italy
## [14] Cyprus
## [15] Latvia
## [16] Lithuania
## [17] Luxembourg
## [18] Hungary
## [19] Malta
## [20] Netherlands
## [21] Austria
## [22] Poland
## [23] Portugal
## [24] Romania
## [25] Slovenia
## [26] Slovakia
## [27] Finland
## [28] Sweden
## [29] Iceland
## [30] Liechtenstein
## [31] Norway
## [32] Switzerland
## [33] United Kingdom
## [34] Montenegro
## [35] North Macedonia
## [36] Albania
## [37] Serbia
## [38] Turkey
## 38 Levels: Albania Austria Belgium Bulgaria Croatia Cyprus Czechia ... United Kingdom
```

*Unidad de las mediciones:

```
unique(enfermeria$UNIT)
```

```
## [1] Number                          Inhabitants per ...
## [3] Per hundred thousand inhabitants
## Levels: Inhabitants per ... Number Per hundred thousand inhabitants
```

*Variable que indica el estatus laboral del personal de enfermería.

```
unique(enfermeria$WSTATUS)
```

```
## [1] Practising            Professionally active Licensed to practice
```

```
## Levels: Licensed to practice Practising Professionally active
```

*Variable que indica cómo agrupamos el personal de enfermería para las mediciones.

```
unique(enfermeria$ISCO08)
```

```
## [1] Nurses, midewives, health care assistants and home-based personal care workers
## [2] Nurses and midwives
## [3] Nursing professionals and midwives
## [4] Nurses
## [5] Nursing professionals
## 5 Levels: Nurses ... Nursing professionals and midwives
```

- Eliminamos la columna Fal.and.footnotes.

```
enfermeria<-enfermeria[,-7]
```

- 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.

```
enfermeria$Value<-as.character(enfermeria$Value)
enfermeria$Value<-(gsub(',','.',enfermeria$Value) )
enfermeria$Value<-(gsub(' ','',enfermeria$Value) )
enfermeria$Value<-as.numeric(enfermeria$Value)
```

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

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

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

```
##
##      23.05      23.18      23.21      23.31      23.43      23.48      23.63
##          1          1          1          1          1          1          1
##       23.7      23.84      23.87      23.91      25.29      25.53      27.84
##          1          1          1          1          1          1          1
##      28.27      28.38      28.57      28.72      28.88      29.29      29.43
##          1          1          1          1          2          1          1
##      29.61      29.65      29.68      29.72      29.97      30.98      31.28
##          1          1          1          1          1          1          1
##      31.47      32.36      32.47      32.48      32.49      32.52      32.58
##          1          1          1          1          1          1          1
##      32.85      32.92      33.15      34.16      34.25      34.26      34.37
##          1          1          1          1          1          1          1
##      34.44      34.46       34.5      34.54      34.57      34.65      34.89
##          1          1          1          1          1          1          1
##      35.17      35.35      35.44      35.58      35.71      35.78      35.96
##          1          1          1          1          1          1          1
##      36.01      36.39      36.45      36.93      37.07      37.14       37.4
##          1          1          1          2          2          1          1
##       37.5      37.51      37.66      37.77      37.91      38.07      38.09
##          1          1          2          1          1          1          2
##       38.1      38.17      38.18      38.26      38.28      38.32      38.65
##          2          1          2          2          1          1          2
##      38.82      38.89      39.18       39.2      39.24      39.27      39.29
##          1          2          1          1          2          1          1
##      39.42       39.6      39.74      39.92      39.95      39.99      40.07
##          2          1          2          2          1          2          1
##      40.25      40.39       40.5      40.54      40.73      40.77      40.89
```

```
##         2         1         2         2         2         1         1
##     40.93     40.94     40.95     41.07     41.08     41.16     41.21
##         2         2         1         2         2         1         2
##     41.28      41.3     41.37     41.61     41.71     41.74     41.86
##         1         1         1         2         1         1         2
##     41.92     42.15     42.16     42.24     42.49      42.6     43.11
##         2         3         1         2         1         2         1
##     43.15     43.52     43.61     43.77     43.82     44.12     44.34
##         1         2         1         1         2         1         1
##      44.4     44.71     44.75     44.77     44.78     44.95     45.39
##         1         1         1         1         2         1         1
##     45.46     45.51     45.58     46.26     46.39      46.7     46.79
##         2         1         1         2         1         2         2
##     46.81     46.85     47.09     47.14     47.38      47.5     47.55
##         2         1         2         2         2         2         1
##     47.58     47.61     47.72     47.85     48.09     48.14     48.15
##         3         2         1         2         2         1         2
##     48.19     48.22     48.43     48.56      48.6     48.68     48.79
##         2         2         1         2         2         2         1
##     48.93     49.04     49.32     49.58      49.6     49.62     49.66
##         2         2         3         1         2         2         1
##      49.8     49.86     49.96     50.03     50.05      50.1     50.16
##         2         1         1         1         2         2         2
##     50.28     50.34     50.48     50.51     50.53     50.66     50.79
##         2         2         1         1         2         1         2
##     50.84     51.14     51.18     51.27     51.33     51.39     51.57
##         2         1         2         1         2         1         2
##     51.61     51.79     51.97     51.98     52.04      52.5     52.58
##         2         1         2         1         2         1         2
##     52.61     52.86     52.97     53.05     53.32     53.54      53.6
##         2         1         1         2         2         2         2
##     53.79     53.81     53.86     53.87     53.93        54     54.07
##         1         2         2         1         1         1         2
##     54.08     54.28      54.4     54.62     54.65      54.7     54.74
##         1         1         2         1         2         1         1
##     54.81     54.86     54.87     54.88     54.96     55.16     55.19
##         2         2         1         2         1         1         1
##     55.29     55.32     55.41     55.51     55.55     55.56     55.69
##         1         3         2         2         1         1         1
##     55.81     55.83     55.86     55.91     55.95     56.11     56.36
##         1         2         2         1         1         2         2
##     56.55     56.61     56.63     56.84     56.87     56.92        57
##         2         3         1         1         2         1         1
##     57.19     57.22     57.23     57.24     57.33     57.67     57.72
##         2         1         1         2         2         3         1
##     57.81     57.86     58.05     58.06      58.1     58.21     58.33
##         2         1         1         1         2         1         1
##     58.54     58.59     58.75     58.77     58.78      58.8     58.87
##         2         2         1         1         1         1         1
##     58.92     59.04     59.09      59.2     59.21     59.75     59.82
##         2         2         1         1         2         1         1
##     59.87      59.9     59.95     59.98        60     60.03     60.04
##         1         2         1         1         2         1         2
##     60.15     60.17     60.32     60.42     60.43     60.51     60.77
```

```
##         1         1         1         1         1         2         1
##     60.85     60.97     61.05     61.06     61.08     61.22     61.25
##         1         2         1         1         1         1         1
##     61.41     61.46     61.47      61.5     61.64     61.66     61.69
##         2         1         2         1         1         1         1
##     61.81     61.89      61.9     61.93     61.94        62     62.13
##         1         1         2         1         1         2         1
##     62.25     62.39      62.6     62.65     62.73      62.8     62.81
##         1         1         2         2         1         1         1
##     62.82     62.86     62.97     63.12     63.16     63.52     63.58
##         1         1         2         3         1         2         1
##      63.6     63.73     63.76     63.82     63.96     64.01     64.21
##         1         2         1         1         1         1         1
##     64.61     64.69     64.71     64.78     64.84     64.92     65.08
##         2         1         5         1         1         1         1
##     65.14     65.23     65.24     65.31     65.37     65.52     65.55
##         1         2         2         1         2         1         1
##     65.56     65.63     65.86     65.94     65.95     66.02     66.08
##         1         1         1         1         2         1         1
##      66.1     66.11     66.28      66.3     66.36     66.53     66.55
##         1         1         1         1         1         1         1
##     66.62     66.73     66.74     67.02     67.23     67.27     67.34
##         2         1         1         1         1         1         1
##     67.47     67.64     67.75     68.09     68.14     68.17     68.23
##         2         2         2         1         1         2         2
##     68.32     68.33     68.39     68.48      68.6      68.7     68.76
##         1         1         1         1         1         1         2
##     68.77     68.98     68.99      69.1     69.63     69.75      69.8
##         2         2         1         1         2         1         1
##      70.1     70.11     70.14      70.3     70.32     70.36     70.39
##         1         1         1         1         2         1         2
##      70.4     70.44     70.52     70.55     70.65     70.72     71.02
##         1         1         1         1         1         1         1
##      71.8     71.89     72.11     72.12     72.15     72.41     72.51
##         1         2         2         1         1         1         1
##     72.71     72.81     72.86     72.99     73.02     73.21     73.79
##         1         1         1         1         1         1         1
##     73.92     74.02     74.26     74.36     74.46     74.48     74.53
##         1         2         1         2         1         1         1
##      74.6     74.64     74.69     75.13     75.24     75.43      75.5
##         1         2         1         1         1         1         1
##     75.58     75.64     75.82     75.87      75.9     76.03     76.11
##         1         1         1         1         1         1         2
##     76.15     76.18     76.32     76.61     76.94     76.95        77
##         1         1         1         1         1         1         1
##     77.01     77.17     77.21     77.27     77.35     77.47     77.54
##         2         1         1         2         1         1         1
##     77.62     77.63     77.79     77.86     77.93     77.94     77.98
##         1         2         1         1         2         1         1
##     78.09     78.21     78.49     78.98        79     79.02     79.03
##         1         1         1         1         1         2         1
##     79.08     79.09     79.12     79.16      79.3     79.42     79.57
##         1         2         2         1         2         1         1
##     79.58     79.65     79.69     79.71     80.03     80.26     80.33
```

```
##         3         2         1         1         1         1         1
##     80.36     80.49      80.6     80.64     80.75     80.95     80.99
##         1         1         1         1         1         1         2
##        81     81.01     81.02     81.05     81.19     81.29     81.32
##         2         2         1         1         2         2         2
##     81.35     81.38     81.39     81.42     81.43     81.49     81.54
##         2         2         2         4         2         4         2
##     81.58      81.7     81.73     81.75     81.77     81.82     81.83
##         1         2         1         1         1         1         1
##     81.86     81.98     82.02     82.07     82.11     82.16     82.17
##         1         2         1         2         2         1         1
##     82.21     82.33     82.37     82.43     82.46     82.47     82.59
##         2         2         2         1         1         1         1
##      82.6     82.75     82.76     82.77      82.8     83.01     83.08
##         1         1         2         1         2         1         1
##     83.09      83.1     83.11     83.47     83.57      83.6     83.65
##         2         1         1         4         2         2         1
##     83.72     83.84     83.89     83.94     83.95     83.98     84.06
##         1         2         2         1         2         2         1
##     84.12     84.22     84.23     84.41     84.44     84.63      84.7
##         1         1         1         2         2         1         1
##     84.77     84.87     85.02      85.2     85.29     85.35     85.41
##         1         1         1         1         2         2         2
##     85.48     85.53     85.55     85.56     85.57     85.63     85.71
##         1         2         2         1         2         2         2
##     85.75     85.77     85.91     85.93     85.95        86     86.03
##         2         2         1         2         2         2         1
##      86.1     86.18     86.21     86.31      86.5     86.53     86.55
##         2         2         1         2         2         1         1
##     86.67     86.68     86.79     86.86     86.91     86.93     86.96
##         1         1         2         2         2         1         2
##        87     87.08      87.1     87.11     87.19     87.21      87.3
##         2         2         1         2         1         2         2
##     87.31     87.53      87.6     87.62     87.64     87.74     87.85
##         2         1         1         2         2         1         1
##     87.86     87.89     87.95        88     88.03      88.1     88.21
##         1         1         1         4         1         1         1
##     88.22     88.33     88.35     88.38     88.43     88.57     88.71
##         1         1         2         1         1         1         2
##     88.74     88.88     88.93     88.94     88.96        89     89.09
##         1         2         2         1         1         1         1
##     89.23     89.26     89.35     89.46     89.49     89.51     89.52
##         1         1         1         1         1         2         2
##     89.54     89.58     89.62     89.67     89.83     89.87     89.89
##         1         2         1         2         2         1         2
##      89.9        90     90.02     90.08     90.19     90.21     90.23
##         1         1         1         1         1         1         1
##     90.41      90.5     90.53     90.67     90.75     90.81     90.85
##         2         2         1         2         1         1         1
##     90.97     91.02     91.06     91.07     91.09     91.13     91.16
##         1         1         1         1         1         1         2
##     91.24     91.41     91.42     91.43     91.44     91.47     91.48
##         1         2         2         1         1         3         2
##      91.5     91.53     91.64     91.65     91.67      91.7     91.72
```

```
##         1         1         2         1         2         2         1
##     91.77     91.88     91.93     91.96     92.03     92.09     92.19
##         1         2         1         2         2         2         2
##     92.21     92.22     92.26     92.32     92.38     92.58     92.68
##         1         1         2         1         2         1         2
##      92.7     92.76      92.8     92.83     92.94     93.04     93.07
##         1         2         1         1         1         1         1
##     93.16     93.17     93.29     93.31     93.36      93.4     93.46
##         1         1         1         1         1         1         1
##     93.48     93.51     93.52     93.57     93.66      93.7     93.74
##         1         1         2         1         1         1         1
##     93.93     93.94     93.99        94     94.29      94.3     94.33
##         2         1         1         3         1         1         1
##     94.51     94.73     94.74     94.82     94.85     94.99        95
##         1         1         2         1         1         1         1
##      95.1     95.21     95.22     95.23     95.26     95.36     95.39
##         1         2         1         1         1         1         2
##     95.53      95.6     95.66     95.72     95.75     95.82     95.89
##         1         2         1         1         1         1         3
##     95.92     95.96        96     96.05     96.14     96.34     96.45
##         2         1         2         1         2         2         1
##     96.46     96.73     96.77        97     97.07     97.08     97.11
##         1         1         2         1         1         1         1
##     97.14     97.19     97.33     97.42     97.45     97.47     97.52
##         1         2         2         2         2         2         3
##     97.55     97.56     97.77     97.82     97.84     97.91     97.99
##         2         2         2         1         1         2         1
##     98.04     98.08     98.13     98.18     98.19      98.2     98.22
##         1         1         1         1         1         1         1
##     98.31     98.32     98.36     98.44     98.55      98.6     98.61
##         2         1         3         2         1         1         1
##     98.62     98.63     98.74      98.8     98.91        99     99.02
##         2         1         1         1         3         2         2
##     99.08     99.15     99.18      99.3     99.43     99.59     99.62
##         2         2         1         2         2         1         1
##      99.7     99.76     99.77     99.78      99.9     99.98    100.06
##         2         1         1         1         2         1         1
##    100.15    100.24    100.33    100.37     100.4    100.41    100.47
##         2         1         1         1         2         1         2
##    100.48    100.49    100.51    100.64    100.65    100.66    100.67
##         1         2         2         1         2         1         2
##    100.71    100.74    100.77    100.82    100.84    100.88    100.93
##         1         4         1         2         1         1         1
##    101.05    101.28    101.33    101.48    101.56    101.57    101.83
##         1         2         2         1         2         2         5
##     101.9    101.91    101.96    101.98    101.99    102.16     102.4
##         1         1         1         1         1         1         2
##    102.46    102.51    102.54    102.57    102.65    102.67    102.79
##         1         1         2         1         1         1         1
##    102.83    102.86    102.89    102.99    103.22     103.3    103.31
##         1         1         1         2         1         2         2
##    103.38     103.6     103.9    103.92       104    104.13    104.16
##         2         1         2         2         1         1         1
##    104.21    104.36    104.49    104.55    104.62    104.65    104.84
```

```
##         1         1         1         1         2         1         2
##    105.04    105.05     105.1    105.19    105.33     105.5    105.72
##         2         2         2         2         1         2         2
##    105.75    105.83    105.94    105.95    106.09    106.26    106.56
##         1         1         1         1         1         2         1
##    106.61    106.64    106.66    106.76    106.82    106.89    106.95
##         1         1         1         1         2         1         1
##    107.03    107.06    107.11    107.41    107.43    107.44    107.73
##         3         2         1         1         2         2         2
##    107.96    107.97    107.98    108.02    108.17    108.37    108.43
##         2         2         2         1         1         1         1
##    108.51    108.59    108.79    108.97       109    109.16    109.27
##         1         2         1         1         1         1         1
##    109.39    109.56     109.6    109.72    109.87    110.25    110.53
##         1         2         1         1         2         2         1
##    110.61    110.68    110.71    110.93    111.08    111.15    111.29
##         1         1         1         2         1         1         2
##    111.56    111.59     111.6    111.79     111.8    111.81     111.9
##         2         2         1         1         2         2         2
##    111.99    112.16    112.26    112.54    112.78     112.9       113
##         1         1         1         1         2         1         1
##    113.12    113.22    113.29    113.32    113.51     113.6    113.63
##         1         1         1         1         1         1         1
##    113.77     113.8    113.85    113.87    114.26    114.38    114.75
##         1         1         1         1         1         2         2
##       115    115.19     115.2    115.21    115.23    115.26    115.38
##         2         1         1         1         4         1         2
##    115.91    115.95       116    116.28    116.39    116.51    116.73
##         1         1         1         2         1         1         3
##    116.83    116.86    117.15    117.38    117.53    117.59    117.62
##         1         1         1         1         2         1         1
##    117.76    117.79    117.88    117.99    118.14    118.16    118.19
##         1         1         1         1         2         2         1
##     118.3    118.31    118.45    118.47    118.59    118.71    118.73
##         1         2         1         1         1         1         1
##    118.74    118.76    118.84    118.91    118.97    119.17    119.21
##         1         2         1         1         2         1         1
##    119.25    119.26    119.34    119.37    119.52    119.56    119.67
##         1         1         1         1         1         2         1
##    119.72    119.88    119.89     119.9       120    120.04    120.11
##         1         3         1         1         2         3         2
##    120.23    120.28    120.43    120.44    120.59    120.61    120.62
##         2         1         1         1         1         2         1
##    120.72    120.83    120.84    121.17     121.3    121.35    121.37
##         1         2         3         1         1         1         1
##    121.43    121.65    121.73     121.8    121.85    121.94    122.15
##         1         1         1         1         1         1         1
##     122.2    122.38    122.45    122.49    122.64    123.04    123.08
##         1         2         1         1         2         2         1
##     123.1    123.12    123.25    123.31    123.52    123.54     123.7
##         2         1         1         1         1         2         1
##    123.76    123.87    123.97    124.01     124.1    124.11    124.12
##         1         1         1         3         1         1         2
##    124.24    124.47    124.57     124.6    124.88    124.89    124.92
```

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##         1         1         5         2         1         1         2
##    125.03     125.1     125.3    125.36    125.78    125.82    125.92
##         1         1         1         2         1         2         1
##    125.94    125.96       126    126.05    126.06     126.1    126.12
##         1         2         1         1         1         2         1
##    126.22    126.44    126.48    126.56    126.61    126.68    126.78
##         1         2         1         1         1         2         2
##    126.91    127.06    127.07    127.26    127.34    127.36    127.64
##         1         2         1         1         2         2         1
##    127.67     127.7    127.79    127.82    127.85    128.01    128.41
##         1         2         1         1         1         2         1
##    128.45    128.48    128.55    128.61    129.13    129.28    129.33
##         2         2         3         1         2         2         1
##     129.4    129.41    129.46    129.71    129.72    129.73    129.78
##         1         1         1         1         2         2         1
##    129.79     129.9    130.02    130.09    130.11    130.45     130.5
##         2         2         2         1         4         1         2
##    130.57    130.64    131.06    131.07    131.34    131.36    131.58
##         2         1         2         2         1         1         2
##    131.64    131.67    131.88    132.02    132.41    132.49    132.53
##         2         2         2         2         1         2         1
##    132.71     132.8    133.08    133.26     133.4    133.45    133.74
##         2         1         2         1         2         1         2
##    133.91    134.09    134.34    134.41    134.57    134.62     134.7
##         2         1         2         1         2         1         2
##    134.75    134.94    135.18    135.37    135.45    135.55    135.64
##         2         2         2         1         1         3         2
##    135.87    136.05    136.16    136.47    136.51    136.59    137.34
##         2         2         1         1         1         1         1
##    137.95    138.11     138.6    138.65    138.69    139.11     139.6
##         1         1         1         1         2         2         1
##    139.63    139.69    139.93    140.05    140.25    140.39    140.41
##         2         1         2         1         1         1         1
##    140.52    140.56    140.62    140.69    140.78    141.06    141.16
##         1         1         1         1         1         2         2
##    141.33    141.42    141.43    141.51    141.67    141.69    141.76
##         2         1         1         1         1         1         2
##    141.98    142.11    142.31    142.37     142.7    143.23    143.54
##         2         2         2         2         2         2         1
##    143.72    143.89     143.9    144.18    144.19    144.26    144.32
##         1         1         2         2         1         2         2
##     144.4    144.45    144.47    144.67    144.81    144.87    145.05
##         1         1         1         1         1         1         2
##    145.19    145.25    145.27    145.35    145.39    145.61    145.66
##         2         1         1         2         2         1         1
##    145.84    145.94    145.99    146.06    146.08    146.16     146.2
##         2         1         1         2         1         1         2
##    146.45    146.52    147.14    147.15    147.18    147.25    147.33
##         1         1         1         2         1         2         1
##    147.49    147.67    147.86    147.88    147.96     148.4    148.51
##         2         2         1         1         2         1         1
##    148.58     148.6    148.99       149    149.41    149.43    149.44
##         2         2         1         2         2         2         1
##    149.64    149.65    149.72    149.74    150.17    150.21    150.31
```

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##         1         1         2         2         1         1         2
##    150.58    150.69    150.85    150.95     151.1    151.17    151.19
##         1         2         2         2         1         2         1
##     151.4    151.48    151.59    151.71    151.77    151.89    152.02
##         1         1         1         1         1         1         1
##    152.04    152.06    152.43     152.5    152.52    152.65    152.89
##         2         2         1         1         1         1         2
##    152.93    152.97    153.13    153.19    153.21    153.37    153.52
##         2         2         2         2         2         1         1
##    153.56    153.69     153.9    153.94     154.2    154.29    154.32
##         1         1         1         1         2         2         2
##    154.43    154.47    154.58    154.59    154.69    154.79    154.93
##         1         1         2         1         1         2         1
##    154.95    155.24    155.33    155.37    155.39     155.4    155.58
##         1         1         2         2         2         2         1
##    155.61    155.66    155.74     155.9    156.01    156.02    156.05
##         2         1         2         1         1         1         2
##    156.11    156.13     156.2    156.24    156.29    156.37    156.44
##         1         2         2         2         2         2         1
##    156.65    156.74    156.76    156.78    156.92       157    157.04
##         1         1         2         2         2         1         1
##    157.12    157.29    157.44    157.47    157.51    157.54    157.58
##         2         1         2         1         2         1         2
##    157.65    157.89    158.06    158.09    158.11    158.18     158.9
##         2         1         1         1         3         3         2
##    158.95       159    159.02     159.3    159.34    159.58    159.73
##         2         3         2         1         2         2         1
##    159.86    160.22    160.26    160.27    160.34    160.49    160.55
##         1         2         2         2         1         1         1
##    160.77    160.85     160.9    161.06    161.08     161.5    161.79
##         2         1         1         1         1         2         1
##    161.94    161.96    162.08    162.13    162.18    162.31    162.49
##         1         1         1         2         1         1         2
##    162.51    162.66    162.67    162.92    163.05    163.12    163.29
##         1         1         2         2         2         1         2
##     163.3    163.35    163.72    163.74    163.76    163.88    163.92
##         1         1         2         2         2         2         1
##    163.94       164    164.27    164.36    164.38     164.4    164.48
##         1         1         1         2         2         2         2
##    164.53    164.54    164.56    164.57    164.61    164.63    164.65
##         2         2         2         1         1         2         2
##    164.69    164.86    165.03    165.06    165.16    165.76    165.84
##         1         1         1         1         2         1         1
##    166.04    166.05    166.11    166.42    166.44    166.49    166.62
##         2         2         2         2         1         1         1
##    166.75    167.02    167.03    167.23    167.26     167.4    167.53
##         1         2         2         1         1         1         2
##    167.71    167.78    167.88    168.01    168.06    168.11    168.13
##         2         1         2         1         1         1         1
##    168.39    168.46    168.47    168.71    168.85    169.03    169.09
##         2         1         2         1         2         1         1
##    169.21    169.25     169.3    169.35    169.38    169.54    169.61
##         1         2         2         2         1         2         2
##    169.71    169.86    169.93    170.01    170.15    170.16    170.26
```

```
##         1         1         1         2         1         1         4
##     170.3     170.4    170.44    170.48     170.8    171.25    171.39
##         2         2         2         1         2         2         1
##    171.53    171.56    171.79    171.85    172.03    172.11    172.35
##         1         2         2         1         2         2         1
##    172.36    172.47    172.49    172.79    173.05    173.18     173.6
##         2         2         1         2         1         1         2
##    173.74    173.77    173.86    173.91    174.13    174.15    174.16
##         1         2         2         2         2         2         2
##    174.19    174.21    174.32    174.33    174.95    174.98    175.05
##         2         2         2         2         1         1         2
##    175.36    175.41    175.45     175.5    175.56    175.68     175.7
##         3         2         2         2         4         1         1
##    175.76    175.91    175.96    176.67    176.81    176.82    176.99
##         1         2         1         2         1         2         2
##    177.16     177.3    177.44    178.55    178.83    179.26    179.37
##         2         2         2         1         1         1         2
##    179.45    179.46    179.63    180.38    180.45    180.74    180.97
##         2         1         2         1         2         2         1
##       181     181.2    181.34    181.38     181.4    181.66    181.79
##         1         2         2         2         2         1         2
##    182.01    182.15    182.27    182.37    182.41    182.45    182.84
##         1         1         2         2         2         1         2
##     183.1    183.24    183.25    183.35    183.37     183.7    183.92
##         1         1         2         1         1         2         1
##    183.95     184.2    184.25    184.45    184.54    184.73    185.13
##         4         1         1         1         2         2         1
##    185.14    185.27    185.45    185.54    185.65    185.84    186.07
##         1         1         2         2         1         1         1
##    186.38    186.64    186.73    186.85    186.92    187.06    187.29
##         2         1         2         1         1         2         2
##    187.32    187.63    187.82    187.92    188.42    188.53    188.59
##         2         2         2         1         2         2         2
##    189.07    189.16    189.49    189.51    189.54    189.55     189.6
##         1         2         2         2         2         2         2
##    189.64    189.86    189.87    190.12    190.21    190.68    190.83
##         2         1         1         1         1         2         2
##    191.12    191.17    191.21    191.58    191.59    191.61    192.05
##         2         1         3         2         2         2         1
##    192.21    192.23    192.27     192.3    192.33    192.45    192.52
##         1         3         2         2         1         2         2
##    192.54    192.93       193    193.53    193.89    194.11    194.18
##         1         2         1         2         2         1         2
##    194.21    194.44    194.49     194.6    194.96    195.13    195.24
##         2         2         2         3         1         1         1
##    195.35    195.66    195.73    195.97       196    196.01    196.05
##         2         2         2         1         1         1         2
##    196.27     196.4    196.58    196.72    196.81    196.82    196.97
##         1         1         1         1         2         1         2
##       197    197.83    197.96       198     198.1    198.29    198.38
##         1         1         1         1         2         1         2
##    198.39    198.59     198.6    198.65    198.83       199    199.18
##         2         1         2         1         1         1         1
##     199.5    199.74    199.79    199.89    200.49    200.84    201.44
```

```
##        1        1        1        1        1        2        2
##   201.81   201.88   202.05   202.24   202.26   202.52   202.82
##        1        1        2        1        1        1        2
##   202.85      203   203.33   203.56    203.6   203.78   203.81
##        1        1        2        2        1        1        1
##   203.98   204.53   204.56   204.69   204.72   204.81   205.13
##        1        1        1        3        1        1        1
##   205.34   205.55   205.57   205.76    205.8   205.89   205.91
##        2        1        1        1        2        1        1
##   206.05   206.12   206.29    206.3   206.31   206.48    206.5
##        1        2        1        1        1        1        1
##   206.51   206.52   206.58   206.64   206.67   206.87   206.95
##        1        1        1        1        2        2        1
##   207.03   207.13   207.23   207.28   207.32   207.38      208
##        2        2        1        1        1        1        1
##   208.19   208.23   208.66   208.85   209.09    209.5   209.62
##        2        2        1        2        1        1        2
##   209.66   209.87    210.2   210.23   210.41   210.63   210.68
##        2        2        1        2        1        1        2
##    211.1   211.53   211.66   211.86   212.35    212.5      213
##        2        2        1        2        2        1        1
##   213.49   213.76   213.92   214.47   214.65    214.8   214.92
##        1        1        2        1        1        2        1
##   215.28   215.67      216   216.45   216.54   216.89   217.53
##        2        1        1        1        1        2        2
##   217.56   218.01   218.32   218.74    218.8   218.92   219.21
##        1        1        1        1        1        1        1
##    219.3   219.37   219.83      220   220.15   221.23   221.65
##        1        2        1        1        2        1        1
##   221.66      223   223.85   223.99   224.01   224.42   225.03
##        1        2        2        1        1        1        1
##   225.22   225.75   225.98   226.34   226.38   226.55   226.77
##        1        2        1        2        1        1        1
##   226.87   227.49   227.67   227.89   228.59   228.62   228.95
##        1        1        1        2        2        2        1
##    229.1   229.64   229.66   230.11   231.29   231.53   232.16
##        1        1        2        2        1        1        1
##   232.44   232.48   232.67   232.87      233   233.27   233.78
##        1        2        2        1        1        2        2
##   234.01      235   236.48   236.72   236.97      237   237.11
##        2        1        2        2        2        2        1
##   237.55      238   238.06   238.32   238.53   238.75   238.89
##        1        2        1        2        1        1        1
##      239   239.41   242.35   243.46   243.55      244   244.36
##        1        2        1        1        1        1        2
##   244.37      245    245.1   245.91   246.26      247   247.46
##        1        1        1        1        1        1        1
##      248   249.03   249.85   249.86      250   250.34   250.58
##        2        1        1        1        1        1        2
##   250.69      251      252      253   253.42      256   256.06
##        2        2        1        2        2        1        1
##      258   258.87   259.07    259.1   260.96      263   263.22
##        1        1        1        2        1        1        2
##   263.73      264   264.38   264.84      265      266   266.58
```

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##        1        1        1        1        1        1        1
##   267.13      268      269   269.73      270      271    271.4
##        1        1        1        1        2        1        1
##   272.05   272.59      273   273.78      274   274.84   274.91
##        2        1        1        2        1        1        2
##   275.36   275.54      276      277   277.41   277.73    279.2
##        2        1        1        1        1        2        1
##      280   280.07      282   282.55   282.74      284   285.68
##        1        1        1        1        1        1        1
##   286.41   286.81      287   287.84      288   288.21      289
##        1        1        2        1        2        1        1
##   289.45   289.95      290   291.93      294      295   296.17
##        1        1        1        1        1        1        1
##      297   297.16      298      299   299.46   302.02   302.17
##        1        1        3        1        1        1        1
##    302.6      303   303.23   303.72   305.41   307.26   307.72
##        2        1        2        1        1        1        1
##      308   309.24   310.07   310.53      311   311.19   311.39
##        3        1        1        1        1        1        1
##   311.68    313.5      314   316.02   316.43      318   318.97
##        1        1        1        1        1        1        1
##      320   320.84   321.14   321.35   322.03   322.51   323.37
##        1        1        1        1        1        1        1
##   324.97   325.46   327.43      329   329.25   329.78      330
##        1        1        1        1        1        2        1
##   330.47   330.94   331.11      332   333.93      335   336.52
##        2        1        1        1        1        1        1
##   337.64      340   342.54   344.89   345.48      346   346.96
##        1        1        1        1        1        1        1
##   347.42      348   348.67   349.15   350.04      352   353.68
##        1        1        1        1        1        1        1
##   353.92   357.05   358.16   360.06   360.48   362.92   363.16
##        1        1        1        2        1        1        2
##   363.75   363.85   365.25      366   366.85   367.58   368.46
##        2        1        2        2        1        2        1
##   370.74   374.35   375.12   377.59      378   378.25   379.17
##        1        1        1        1        1        1        1
##   379.91   383.21      385   385.95      386    386.3   390.53
##        2        1        1        2        1        1        1
##   394.61      395   395.26      397   398.89   399.08   399.45
##        2        1        2        1        2        2        1
##   400.23   400.24   401.55   404.11   406.07   406.66      408
##        1        1        1        1        1        1        1
##      409   409.21   409.23      410   410.59   410.75   412.62
##        1        1        2        1        1        1        1
##    417.7    418.6   418.85   419.24   419.61   420.06   420.97
##        2        1        1        1        2        1        1
##   421.75      422   422.43   422.86      425   427.34   427.75
##        1        2        2        2        2        2        2
##   428.68   429.43    429.8   430.15   430.21   430.73    431.9
##        2        1        2        2        1        1        1
##   432.36      433   434.58   435.43   435.46   436.49   436.77
##        1        1        2        2        1        1        1
##   437.41   437.47   438.81      439   439.23   439.58   440.79
```

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##         2         2         2         2         1         1         1
##    440.98     441.4    441.73    441.82    442.52    442.98    444.01
##         1         1         1         2         1         2         1
##    444.39    445.59    446.41    446.44    446.72       447       450
##         1         1         1         1         2         1         1
##    451.14    451.17    452.02    454.23    454.89    455.85       456
##         1         1         1         2         1         2         1
##    456.19    456.79    457.04    457.17       458    458.04     458.7
##         1         1         1         1         1         1         1
##    459.65    459.72    461.06    461.81    461.99       462       463
##         1         2         2         1         1         1         1
##    463.68    464.51    465.28    465.54    465.88    466.27    467.46
##         1         2         1         2         1         1         2
##    467.81    468.41       469    470.59    470.92    472.01    472.46
##         1         1         1         1         2         2         1
##    472.75     473.7    474.65    474.77       475    475.26    475.68
##         2         2         2         1         1         1         2
##    475.74    476.48    476.96       477    477.05    477.33    478.27
##         1         2         2         1         2         1         1
##    478.81       479    479.24    480.23    480.34    482.22    482.34
##         2         1         1         2         2         1         1
##    482.45    482.55    482.79    483.02    483.22     483.4    483.86
##         1         1         2         2         1         2         2
##    483.94       484    484.07    484.22    484.25    484.26     484.3
##         1         2         1         1         1         1         1
##    484.71    484.72    484.75    485.14    485.32    485.64    485.71
##         1         1         1         2         1         1         1
##    485.91    486.01    486.44    486.49    486.99    487.49    488.26
##         2         1         1         1         2         1         1
##    488.46    488.53    488.54    488.86    488.92    490.25    490.65
##         1         2         1         1         1         1         1
##    490.71    491.16    491.26    491.82    492.62    492.98    493.04
##         1         1         2         2         1         1         2
##    493.77    494.42    494.47    494.93    495.35    495.51    496.43
##         1         1         1         2         1         1         2
##       497     497.9    498.77    500.26    500.53    500.64    501.25
##         1         2         1         1         1         1         1
##       502    502.06    502.94     503.4    503.54    504.05     504.1
##         2         1         1         1         3         2         2
##    504.32    504.79    505.15    505.48       506    507.68    508.09
##         1         2         1         1         1         2         3
##    508.33    508.69    509.16    509.51    510.07    510.19    510.27
##         1         1         1         1         2         1         1
##    510.91    511.09    511.89    512.19    512.49    512.91    513.88
##         2         2         2         1         1         1         3
##    514.16     514.3    514.91    514.99    515.17    515.77    516.71
##         2         2         2         2         1         2         2
##    518.32    519.37    519.43    519.61    519.93    520.02    520.11
##         2         1         2         2         1         2         2
##     520.2    520.22    520.25     520.7       521    521.89    521.94
##         1         2         1         1         1         2         2
##    521.98    522.97    522.99    523.08    523.24    524.02    524.45
##         2         2         1         1         2         2         2
##       525    525.74    525.97       526    526.69    526.71     527.3
```

```
##        1        1        1        1        1        1        2
##   527.43   527.57   527.58   527.67   527.75   528.66   528.91
##        2        2        2        2        2        2        1
##   530.24   530.43   530.74   532.14   532.43   532.98   533.84
##        2        2        2        1        2        2        2
##   533.94    534.6   534.98   535.18   535.53   535.79   536.54
##        2        2        1        1        2        1        2
##   537.42      538   538.09   538.66   538.97   539.22   539.77
##        1        1        1        1        2        2        1
##      540   540.12   540.15   541.34   541.89   542.14   542.74
##        1        1        1        2        2        1        1
##   542.88   543.61   543.62   543.71   544.37   545.35   545.39
##        1        2        2        1        2        1        1
##   545.69   545.74   546.16   546.93      547   548.09    548.2
##        2        1        1        2        1        1        2
##   548.32   548.64      549   549.43    550.1   550.48   551.26
##        2        2        1        1        2        1        2
##   551.34   551.44   551.86   552.58   553.29   554.16    554.4
##        2        2        2        1        2        2        1
##    556.7   557.21   557.25   557.51   557.84   559.18      560
##        2        1        2        2        1        1        1
##   560.08   563.58   564.02   564.48      565   565.01   565.55
##        1        2        2        2        1        2        2
##   565.59   566.02   568.32   568.48   568.96   569.16   569.23
##        1        2        1        2        1        1        1
##   569.62   569.78   569.96   570.09   570.26   570.27   571.28
##        4        2        2        2        2        1        2
##   571.48   571.58   573.62   573.67   574.01   574.07   574.19
##        1        1        2        2        2        2        2
##   574.21   574.28   575.02   575.16   575.47   575.59   576.04
##        2        2        2        2        2        1        2
##   577.43   577.86   578.75   579.74   579.83   580.18    580.2
##        1        1        2        1        2        2        1
##   581.02   581.31   581.89   582.11    582.9   582.99   583.46
##        2        2        1        2        2        1        1
##   583.93   585.47   586.58   586.71   586.85   587.19   587.33
##        2        2        1        2        2        2        2
##   587.35   587.68   587.73   588.21   588.49   588.72   589.25
##        2        1        1        2        1        1        1
##   589.58   589.84    590.4   590.49   590.65   590.85   590.99
##        2        2        1        2        2        2        1
##   591.42   591.59   592.24   592.74   593.57   593.61   593.87
##        1        1        2        1        2        1        2
##   594.77   594.86   595.04   595.19   595.65   596.02   596.28
##        1        1        1        1        2        1        2
##   596.92   597.36   597.86   597.96   598.68    598.7   598.73
##        2        1        1        1        1        1        2
##    599.7   600.18   600.63    600.8   600.88   602.02   602.23
##        1        1        1        1        2        2        2
##   602.25      603   603.29   605.47   605.85   605.94   606.57
##        2        1        1        2        1        1        1
##    607.2   607.35   607.42   607.49   607.66   607.67   607.76
##        1        2        2        1        1        2        2
##   607.81   607.96   608.29   608.35   608.43   608.75   609.75
```

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##         2         2         2         2         2         1         1
##    609.99    610.04     610.2    610.64    610.73    610.81    612.18
##         1         1         2         2         2         2         1
##    612.36     612.4    613.05    613.32    613.78    614.75     614.8
##         1         2         1         2         2         2         1
##    615.34    615.41     616.1    616.59    616.77    616.99    617.44
##         1         2         1         1         2         1         1
##    617.52     618.1    619.18    620.83    620.88    621.49    621.71
##         1         1         2         1         1         1         1
##    622.02    622.86    623.08    623.69    623.96    623.98    624.15
##         2         1         1         1         2         2         2
##    625.55    626.06    626.66     627.6    627.73    628.83    628.91
##         1         1         2         2         1         2         2
##    629.13    629.31    632.19     632.2    632.46    632.53    632.68
##         2         2         2         1         3         1         1
##    633.36       634    634.31    634.59    634.77     634.9    635.04
##         1         1         2         2         1         2         1
##    635.16    635.76    636.44    636.77    637.28    637.82    637.91
##         2         1         2         1         2         2         2
##       638    638.38    639.24     639.5    639.84    640.05    640.19
##         1         1         1         2         2         2         2
##    640.51    640.58    640.83    640.95    640.97    641.46    642.11
##         2         1         2         1         1         1         2
##    642.42    642.64    642.76    643.49    643.53    643.55    643.64
##         1         2         1         2         1         1         2
##    643.81    644.18    645.36    645.46    646.03    646.44    646.88
##         2         1         1         1         2         1         1
##    646.91    647.38    647.53       648    648.12    648.52    649.59
##         2         1         1         2         2         2         1
##    649.75    650.65     651.2    651.39       652    652.69    652.78
##         1         1         1         1         1         2         2
##    653.05    653.72    653.89    654.06    655.08    655.67    655.74
##         2         2         2         2         1         1         1
##    656.05    657.64    657.72    657.81       658    658.35    658.89
##         1         2         2         1         1         1         1
##    659.15    659.65    660.14    660.48    661.44    661.53     661.8
##         1         1         1         1         1         2         1
##    662.49     662.9    663.63    664.09     665.3    665.75    665.91
##         2         2         2         1         2         1         1
##    667.81     667.9    668.24    668.25    669.15     669.2    669.28
##         2         2         1         1         1         2         2
##    671.15    671.19    672.96    673.04    673.37    673.87    675.85
##         2         1         2         2         1         1         2
##    676.24    676.33     677.2    678.03    678.77    679.12    679.44
##         1         1         2         2         1         2         1
##    679.56    679.63     682.5    682.84       684    684.17    684.55
##         2         1         1         1         2         1         1
##    684.67       685     685.2    685.67    686.54    686.75    687.82
##         2         1         1         2         1         1         2
##    688.01    688.36    688.48    688.73    689.41    690.27    690.55
##         2         1         1         2         2         1         1
##    691.23     692.2    692.29    692.52    692.91    693.17    693.19
##         1         1         1         1         2         1         1
##    693.54    693.59    694.91    694.99    695.79       696    696.66
```

```
##         1         2         2         1         1         1         1
##    698.18    700.75    702.39    702.68    703.69    704.31    705.41
##         2         2         2         2         2         2         2
##    705.74    705.88    706.66    707.06     707.1    707.57    708.43
##         1         1         1         1         1         2         2
##    708.92    710.34    710.79    711.13    711.46    711.64    712.22
##         2         1         1         1         1         1         1
##    712.31    712.99    714.04    714.66    715.88    716.17    716.34
##         1         1         1         2         1         2         1
##    718.88    721.04    721.24    721.49    724.04    724.88    728.12
##         2         2         1         1         1         1         1
##    732.11    732.54    732.76    734.44    735.04    736.01    737.26
##         1         1         1         1         2         2         2
##    737.73    737.74    738.26    738.71    739.73    741.07    742.14
##         1         2         1         1         2         2         2
##    742.37    742.85    743.12       744     744.4     745.8    746.78
##         2         1         2         1         2         1         1
##    746.79    747.72    749.32    749.65    750.41     751.4       753
##         1         2         1         2         1         2         1
##    753.51    754.57    754.78    755.23    757.44    758.26    759.46
##         2         1         2         1         2         2         2
##    759.67       760    761.29     761.4    762.98       763    765.46
##         2         2         1         1         2         2         1
##     765.9    766.29    766.58    768.57    768.59    768.71    769.11
##         2         2         1         2         2         1         2
##     769.8    770.47    770.52    770.82    770.92    770.98    772.43
##         2         2         1         2         2         1         1
##    772.73    772.82    773.21    773.54    774.39    777.57    777.89
##         1         1         1         2         2         1         2
##    777.91    778.33    778.53    778.73    781.21    782.16    782.36
##         1         2         2         1         2         1         1
##    782.53    783.09    783.28    783.43    785.17    785.28    785.77
##         1         2         1         1         2         2         1
##    786.96    787.06    787.93    788.79    789.38    789.82    790.12
##         1         2         1         2         2         1         1
##    790.66     790.9    792.24    792.88       793    793.25    793.36
##         1         2         1         1         2         1         1
##    793.65    793.93    794.04    794.14    794.79    795.03    797.68
##         1         2         1         1         2         1         2
##     798.1    799.34    799.79    800.51    800.71    800.77    802.59
##         1         1         1         2         1         1         2
##    802.74    802.75    802.78    803.42    804.91    805.69    805.72
##         1         2         2         1         1         2         1
##    805.82    806.36    806.63    807.32    807.98    808.39    809.45
##         1         3         1         1         1         1         2
##    809.55    810.97    811.34    812.21    812.33     812.5    812.77
##         1         1         1         1         2         1         2
##    815.41    816.37    816.63    817.14    818.34    818.66    820.05
##         2         1         1         2         1         1         1
##    820.71       821    821.46    822.01    823.55    823.94    824.04
##         1         1         1         1         1         1         1
##    824.42     825.3    827.55    827.56    827.64    828.38    829.08
##         1         1         1         2         2         1         1
##    829.12    829.26    830.32    830.39    831.39    831.72    831.74
```

```
##         2         1         1         1         1         1         1
##    832.54    833.05    833.06    833.33    834.01    834.13    834.16
##         2         1         2         1         1         1         1
##    834.17    835.31    835.66    836.43    836.69    837.74    837.95
##         2         1         1         2         1         1         1
##    838.51    838.54    838.84    839.12    840.51    840.58       841
##         1         1         1         1         1         1         1
##    841.49       842     842.2    842.28    842.38    843.24     844.1
##         1         2         1         1         1         1         1
##    844.27    845.22    845.29     846.1    846.28    846.44    847.51
##         1         2         1         1         2         2         1
##    848.29    848.97    849.15    850.19    850.41    850.86    851.91
##         1         1         1         1         1         2         1
##    853.59    855.74    855.97    856.69    856.71    858.29    859.18
##         1         1         1         2         1         1         1
##    859.99    862.45    862.76    866.73    867.58    867.79    867.83
##         2         1         1         2         1         2         2
##    867.97    868.06    868.15    869.57    871.46    874.28    875.18
##         1         1         1         2         2         2         1
##     878.2    878.32    878.73    878.99    880.01     880.3    881.01
##         1         1         1         1         1         1         1
##    882.46    882.72    883.22    884.03    885.71    886.65    888.61
##         1         1         1         1         1         2         1
##     890.8    891.56    892.96    893.63    894.35    894.48    894.52
##         1         1         1         2         2         2         1
##    896.06    896.14    896.35    898.56    898.58    899.68    900.25
##         1         2         2         1         1         1         1
##    901.46    903.25    903.54    904.06    904.71    907.03    910.16
##         2         1         1         1         1         2         2
##    911.44     912.4    912.78    914.17    915.17    916.09     917.7
##         1         1         2         1         1         1         1
##     919.2    920.87     921.6    922.23    922.79    924.43    925.74
##         1         2         1         1         1         1         1
##    926.13    926.17    926.25    928.23    930.73    930.76    930.84
##         2         2         2         2         1         1         2
##    931.04    933.59    934.06    934.28    934.32    935.04    935.55
##         1         1         2         1         2         1         1
##     936.2    936.64    937.52    937.77    937.98    938.43    941.08
##         2         1         1         1         1         1         2
##    942.58     943.8    943.97    944.94    945.62    945.88    945.93
##         1         1         1         1         1         1         1
##    947.88    949.35    950.63    951.46    951.92    951.98       952
##         2         1         2         2         2         1         1
##    953.88    955.56    955.88    956.47    957.05    958.19    959.56
##         2         1         2         1         1         1         1
##       960    960.05    960.38    962.29    962.49    965.26    967.29
##         1         1         1         2         2         1         2
##    967.96    968.06    968.77    970.97    971.88    972.17    972.47
##         2         2         1         2         1         1         1
##    972.89    974.02    974.17    974.98    975.28    975.55    976.02
##         1         1         1         1         2         1         1
##    976.58    978.83    980.46    980.56    980.75    981.25    981.36
##         2         1         1         1         1         1         1
##    981.99    982.02    982.04    982.05    984.51     984.6    985.45
```

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##         1         1         1         2         2         2         1
##    986.85    987.33    989.57    990.83    991.26    991.65    991.86
##         2         2         1         1         1         1         2
##    992.31    992.65    992.68    992.96    993.36    993.46    993.55
##         1         2         2         1         2         1         2
##    993.68    994.95    995.11    995.18    995.36    995.93    996.03
##         1         2         2         1         2         1         2
##    996.34    996.71     997.6    998.46    998.48    999.36   1000.23
##         1         1         1         1         1         1         1
##      1001   1002.18   1002.28   1002.36   1002.97   1003.86   1004.16
##         2         1         1         1         2         1         1
##   1005.71   1005.77      1007   1008.23    1008.6    1009.3   1009.88
##         1         1         2         1         2         2         2
##   1010.08   1011.01   1011.07   1012.16   1012.77    1013.9   1014.03
##         1         1         2         1         1         1         2
##   1014.08   1014.21   1014.66   1015.86   1016.63   1016.64   1017.09
##         1         1         1         2         2         1         1
##   1017.19    1018.1    1018.3   1018.44   1018.56   1019.07    1019.6
##         2         1         1         1         1         1         1
##   1019.95   1020.53   1021.35      1022   1022.08   1022.25   1022.79
##         1         1         2         1         1         1         1
##   1022.81   1024.99   1025.08   1025.44   1025.46   1025.91   1026.21
##         1         2         2         2         1         2         2
##   1026.49   1027.47   1028.94   1029.45    1029.8   1030.12   1030.15
##         2         2         2         1         1         1         1
##   1033.33   1033.41   1033.77   1036.72    1036.8   1037.97   1040.17
##         1         1         1         1         1         2         2
##   1041.09   1041.62   1042.11   1042.57   1042.83   1042.91   1043.67
##         1         1         1         2         2         1         1
##   1044.44   1044.67    1045.4   1045.99   1046.74   1048.36   1048.68
##         1         1         1         2         1         2         1
##   1049.74   1050.07   1050.25   1050.29   1050.35      1051   1051.51
##         1         1         1         1         1         1         1
##   1052.78    1054.3   1054.67    1055.5   1055.59   1058.14   1060.08
##         1         1         1         2         1         1         1
##   1060.47   1060.54   1063.85   1063.96   1064.48   1064.59   1064.61
##         1         1         1         1         1         1         1
##   1066.83   1067.25    1067.7   1068.68   1069.24   1069.37   1069.77
##         1         1         1         1         2         1         1
##   1069.94   1070.62   1071.17   1071.74   1071.98   1073.31   1073.45
##         1         1         1         1         1         1         1
##   1074.46    1074.8   1075.91   1077.28   1077.58   1078.06   1078.11
##         1         1         1         1         1         1         1
##   1078.79   1079.01    1080.2   1082.48   1083.24   1083.93   1084.41
##         1         2         1         2         1         2         1
##   1084.45   1084.76   1085.84   1085.95   1086.55   1087.42   1087.83
##         1         2         1         1         2         2         1
##   1088.35   1089.65   1090.29   1090.51   1090.53   1090.88      1091
##         2         1         1         1         1         2         1
##   1091.14   1091.24   1092.59   1092.94   1093.18    1093.2   1093.21
##         1         2         1         1         2         2         1
##   1093.58   1093.79   1093.87   1094.03   1096.03   1096.95   1097.29
##         1         1         2         2         1         2         1
##   1097.77   1098.11   1098.13    1098.6   1099.32   1100.75   1101.24
```

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##         1         1         1         1         1         1         1
##   1101.87   1102.92   1104.56   1105.03   1106.07   1106.11   1108.33
##         1         2         1         2         1         1         1
##    1108.5    1108.8   1110.12   1110.92   1112.34   1112.47   1112.72
##         1         1         1         1         1         2         1
##   1113.27    1115.2   1115.76   1116.36   1116.87   1117.12   1117.18
##         2         2         1         2         1         2         2
##   1117.43   1117.77    1119.2   1120.35    1120.7      1122   1122.45
##         1         1         1         1         1         1         1
##   1124.08   1124.36   1124.42   1125.16   1126.84   1127.24   1129.08
##         1         1         2         2         1         2         1
##   1130.78   1131.48    1131.9   1132.14   1133.51    1133.6   1135.02
##         1         1         2         1         1         1         1
##   1136.03   1136.42   1137.05    1137.8   1138.17   1138.34   1139.67
##         1         4         1         1         1         1         1
##   1141.06   1141.33   1141.51   1142.44   1145.31   1145.46   1146.65
##         2         2         1         1         2         2         2
##   1146.94   1148.04   1148.09   1148.36   1149.39   1149.98   1150.35
##         1         2         1         2         2         2         1
##   1150.64   1151.22    1152.2      1153   1153.65   1153.83   1155.39
##         2         2         2         1         1         1         1
##   1155.65   1156.07   1158.57    1159.9   1160.42   1161.47   1162.45
##         1         2         2         1         2         2         1
##   1162.79   1163.51   1163.69   1163.96    1165.9   1166.22   1166.79
##         1         2         2         1         2         2         2
##   1167.76   1168.65   1168.75   1168.86    1169.2   1169.84   1170.79
##         2         2         1         2         2         1         1
##   1170.85   1171.64   1172.49   1173.76    1176.2   1178.28   1179.65
##         1         2         2         1         1         1         1
##   1180.67   1181.59      1182   1184.23   1184.73   1187.17   1187.43
##         1         1         1         2         2         1         1
##   1188.71   1189.68   1190.83   1191.21   1191.22   1191.28   1192.02
##         1         1         2         1         1         1         2
##   1192.76   1194.43   1195.46   1196.12   1196.13   1196.62   1197.98
##         2         1         1         1         1         2         2
##   1198.03   1203.23   1203.39   1203.44   1203.63    1204.6    1207.8
##         2         1         1         2         1         1         2
##   1208.13   1208.38   1208.41   1210.58   1210.76   1212.61   1212.76
##         1         2         1         1         1         1         1
##   1213.14   1213.96   1214.58   1214.69   1216.36   1217.01   1217.07
##         1         2         1         1         2         1         1
##   1217.87   1218.46   1219.14    1219.8   1221.62   1222.08   1222.24
##         2         2         1         2         1         1         1
##   1222.97   1223.27   1223.49   1224.03   1225.83   1226.44   1227.17
##         1         1         1         2         1         2         2
##   1227.22    1228.1   1228.19   1228.25   1228.72   1228.75   1229.19
##         2         2         2         2         2         2         2
##   1229.67   1230.12   1231.67   1233.79   1234.32   1234.37   1234.59
##         2         2         2         1         1         2         2
##   1234.71   1235.27   1238.39   1240.16   1240.64   1242.37   1244.47
##         2         1         1         1         1         1         1
##   1244.85      1246    1249.6      1253   1254.59   1254.93   1255.46
##         1         1         1         1         1         1         2
##   1256.52   1256.66   1256.77   1259.14   1261.07   1263.22   1263.84
```

```
##         1         2         1         1         2         1         2
##   1264.36   1264.59   1265.27   1265.48   1266.13   1274.07   1278.62
##         2         1         1         2         1         1         1
##   1280.54   1282.35   1282.99   1283.23   1283.28   1284.33   1285.46
##         1         1         1         1         1         1         1
##   1288.18   1288.28   1289.59   1290.87   1292.75   1294.19   1295.19
##         2         1         1         1         1         2         1
##   1295.81    1298.5   1299.54   1299.73   1305.31   1310.28   1312.65
##         1         2         1         1         1         1         1
##   1313.22   1313.86   1313.93   1315.34   1317.45   1318.02      1319
##         1         1         1         1         1         1         1
##   1321.98   1323.01   1324.57   1325.65   1329.14      1331   1338.88
##         1         1         1         1         1         1         1
##   1339.71   1340.48   1341.69   1342.56   1343.07    1344.8   1346.54
##         2         1         1         1         1         2         1
##   1350.93   1352.82   1355.13   1365.97   1369.51    1370.1   1372.43
##         2         1         1         1         1         1         1
##   1373.41   1375.31   1379.14   1381.09   1385.96   1386.61   1386.72
##         1         1         1         1         1         1         2
##   1391.02    1392.7   1408.08   1414.12   1415.37   1417.49   1418.08
##         2         1         1         1         1         1         1
##   1419.55    1420.4    1420.7   1421.24   1422.02   1422.48   1425.74
##         1         1         2         1         2         1         1
##   1426.35   1426.61   1432.57   1433.67   1436.24   1447.25   1449.39
##         1         1         1         1         2         1         1
##   1449.62   1454.22   1454.23   1455.69   1457.81   1460.31   1462.14
##         2         2         2         1         1         1         1
##   1463.41   1463.66   1465.69   1466.88   1467.54   1468.55   1475.92
##         1         1         2         2         1         1         2
##   1478.35   1482.07   1484.96   1486.63   1487.39   1492.17   1498.28
##         2         2         1         1         1         1         1
##   1498.54   1501.02   1502.52   1503.09   1506.91   1508.34    1508.7
##         1         2         1         1         1         1         1
##   1512.64   1512.96   1513.36   1514.79   1516.29   1516.51   1518.35
##         1         1         1         1         2         1         1
##   1523.59   1525.23   1525.63   1526.26   1529.71   1531.25   1532.82
##         1         1         1         1         2         1         2
##   1533.06   1535.06   1536.56   1540.31   1542.23   1543.79   1545.26
##         2         1         1         1         1         1         2
##   1545.28    1545.3   1545.87   1547.68   1557.29   1562.17   1563.57
##         2         1         1         2         1         1         1
##      1567   1568.34   1569.21   1572.31   1572.94   1574.23   1574.41
##         1         1         2         1         1         1         1
##   1583.33   1584.27   1584.34   1588.01   1588.15    1590.9   1591.83
##         1         1         2         1         1         1         1
##   1592.08   1592.44   1594.07   1596.12   1597.36   1597.57   1602.82
##         1         1         1         2         1         1         1
##   1606.44    1609.5   1612.86   1614.45   1614.78   1615.53   1615.74
##         1         1         2         1         1         2         1
##   1617.89   1620.92    1621.8   1622.24   1626.01    1626.8   1626.95
##         1         1         1         1         1         2         1
##   1628.41    1632.6   1633.56   1637.11   1637.62   1638.13   1640.15
##         2         1         1         1         1         1         2
##   1643.51   1645.58   1652.64   1654.85   1655.16   1657.81   1661.84
```

```
##         1         1         2         1         1         1         1
##   1662.56   1665.45   1665.86   1666.74   1667.22   1667.96   1669.48
##         1         2         1         2         1         1         1
##   1669.55   1670.26   1671.54   1673.56   1688.93   1689.11   1692.28
##         1         1         1         1         2         1         1
##   1693.69   1697.35   1698.59   1700.79   1701.27   1701.56   1702.09
##         2         2         1         1         1         1         1
##   1706.88   1708.17   1714.28   1717.93   1721.11   1722.44   1722.73
##         2         2         1         1         2         1         1
##   1728.17   1729.84   1732.59   1733.91   1734.14   1744.27   1747.11
##         1         2         1         2         1         2         2
##   1747.41   1747.62   1748.64   1754.39   1756.74   1758.32   1759.28
##         1         1         2         1         1         2         1
##   1765.89   1766.56   1766.58   1768.37   1774.28   1782.06   1787.16
##         1         1         2         2         2         2         1
##   1788.72   1790.08    1791.2   1791.86   1795.63   1799.93   1800.26
##         1         2         2         1         1         1         1
##   1801.35   1804.86   1807.53    1807.8   1808.75   1812.08   1812.98
##         2         2         1         2         1         1         1
##   1819.44   1822.24   1822.52   1822.88   1824.51   1826.71   1828.25
##         1         2         1         2         2         1         1
##   1829.74   1830.86    1838.1   1842.18   1848.98   1849.55   1851.82
##         2         1         2         1         1         2         1
##   1854.16    1856.3   1856.71   1856.78   1858.38   1858.95   1865.51
##         1         1         1         1         2         1         1
##   1865.84   1867.87   1875.32   1884.84   1887.73   1891.72    1900.9
##         1         2         2         2         1         1         2
##   1902.02   1904.79    1921.7   1923.69   1924.37   1930.79   1937.43
##         2         1         2         1         2         1         2
##   1939.13   1945.83   1948.36   1950.41   1953.93   1955.53   1966.87
##         2         1         2         1         2         1         2
##   1968.73   1974.11   1979.03   1979.84   1981.09   1986.49   1988.92
##         2         1         2         1         1         2         2
##   1993.79   1996.15   1997.85   1998.81   2001.44   2005.81    2008.1
##         2         2         2         1         1         1         2
##   2013.87   2015.44   2016.05   2017.08    2027.5   2027.73      2039
##         1         2         2         1         1         2         2
##   2043.92   2049.73   2054.38   2057.62    2059.2   2064.63   2073.88
##         2         1         2         2         2         1         2
##   2075.22   2076.84   2077.41   2079.57    2089.8   2095.73   2100.39
##         2         2         1         2         2         1         2
##    2101.5   2101.56   2102.94   2105.38   2110.44   2121.23   2123.58
##         2         1         1         2         2         2         2
##   2134.31   2136.14   2137.37   2141.42   2155.64   2161.74   2193.85
##         1         2         2         2         1         2         1
##   2197.33   2199.88   2203.22   2224.55   2233.37   2233.66    2234.6
##         1         2         1         1         2         1         1
##   2236.62   2252.28   2255.44   2266.44   2281.91   2284.77   2293.29
##         1         1         1         1         2         1         1
##   2297.79   2317.75   2319.51   2347.43   2353.32   2367.17   2371.81
##         2         1         1         2         1         2         1
##   2372.24   2372.74   2385.69   2388.83   2395.58   2397.49   2403.35
##         2         1         2         2         1         1         2
##   2417.45   2421.33   2422.61   2426.65   2429.74    2434.2   2434.57
```

```
##         1         1         1         2         1         2         2
##   2442.17   2442.38   2442.79   2443.19   2445.81   2452.72   2455.22
##         1         1         1         2         1         1         2
##   2466.68   2468.91   2475.76   2484.43   2495.52    2500.6   2502.85
##         2         2         1         2         1         2         1
##   2504.77   2516.63   2525.07    2536.5   2545.34   2546.68   2548.54
##         2         2         1         2         1         1         2
##   2551.03   2552.39   2571.66   2576.19    2587.6   2609.71   2612.32
##         1         1         2         1         2         1         1
##   2613.93   2618.95   2619.75   2624.42   2625.09   2625.59   2626.95
##         2         2         1         2         1         1         1
##   2637.88   2647.65      2653   2655.45   2665.76   2666.91    2673.8
##         1         1         2         2         1         1         1
##      2686   2692.17   2697.78    2707.8      2741   2743.16      2748
##         2         1         2         2         2         1         1
##      2765   2777.17   2780.97      2786   2794.53   2800.41      2805
##         2         1         1         2         1         1         2
##   2810.22   2821.96   2828.64      2838   2843.25      2853   2866.13
##         1         1         1         2         1         2         1
##   2885.77      2890   2892.67   2894.84   2898.42   2902.17      2903
##         1         2         1         1         1         1         2
##   2903.69      2909   2909.92   2919.03   2919.46    2927.2      2935
##         1         4         1         1         1         1         2
##      2951      2969      2972      2974      2980      3006    3016.7
##         2         4         2         2         2         2         1
##      3025      3032   3037.25      3040      3043   3043.98      3054
##         2         2         1         2         2         1         2
##      3069   3074.78   3078.34   3078.64   3079.37      3090   3090.52
##         1         1         1         1         1         4         1
##      3128      3136      3137      3151      3155      3165   3177.88
##         2         2         2         2         2         2         1
##      3178     3196.5      3200      3204   3228.33      3255      3283
##         2         1         2         2         1         2         2
##      3289      3298      3302   3336.69   3364.43      3365   3369.58
##         2         2         2         1         1         2         1
##   3372.97      3377   3377.75   3397.57      3412   3414.37      3431
##         1         2         1         1         2         1         2
##      3440      3457   3462.03   3462.65   3482.21   3500.11   3523.06
##         2         2         1         1         1         1         1
##    3536.8      3592      3603      3629      3699      3703      3745
##         1         1         2         2         2         1         2
##      3757      3772      3781      3916   3916.33      3930      3931
##         2         2         2         2         1         1         2
##      3946   3953.89      3982      4007      4011      4019      4022
##         1         1         2         2         2         1         2
##      4024      4078      4106      4107      4128      4148      4178
##         2         1         1         2         1         1         1
##   4182.95      4188    4189.1   4194.84      4198   4219.51      4224
##         1         2         1         1         2         1         2
##    4232.2   4259.81      4262      4266   4267.85      4268   4290.73
##         1         1         1         2         1         1         1
##   4307.73   4313.39      4316      4328      4336   4338.36      4351
##         1         1         1         2         1         1         2
##      4369      4376      4388      4408      4410      4421      4434
```

```
##    1    1    1    2    1    1    3
## 4436 4445 4477 4481 4500 4509 4510
##    1    2    1    1    1    1    2
## 4522 4526 4527 4546 4551 4566 4574
##    1    2    1    2    1    1    2
## 4589 4598 4603 4607 4625 4630 4639
##    1    1    2    1    3    1    1
## 4644 4657 4663 4667 4684 4701 4710
##    1    1    2    1    1    2    2
## 4717 4719 4728 4738 4745 4748 4753
##    1    2    2    1    1    1    1
## 4770 4776 4781 4797 4814 4820 4863
##    2    1    2    3    1    2    2
## 4867 4870 4875 4896 4904 4912 4921
##    1    1    2    2    1    1    2
## 4978 4988 4991 4994 5003 5006 5007
##    2    1    1    2    2    2    2
## 5008 5019 5022 5034 5035 5074 5078
##    1    2    1    1    2    1    1
## 5085 5094 5112 5119 5135 5162 5174
##    1    2    2    2    1    1    2
## 5214 5227 5253 5267 5278 5280 5289
##    1    1    2    2    1    1    2
## 5346 5363 5374 5387 5422 5457 5458
##    1    1    1    2    1    1    1
## 5459 5465 5474 5482 5484 5487 5500
##    2    1    1    1    1    1    1
## 5501 5512 5539 5546 5595 5602 5603
##    1    1    2    1    1    2    1
## 5625 5654 5671 5704 5714 5733 5758
##    1    1    1    1    1    1    1
## 5786 5820 5827 5835 5837 5841 5843
##    2    2    2    1    1    1    2
## 5878 5903 5994 6006 6027 6029 6031
##    1    1    1    2    1    1    2
## 6045 6048 6070 6085 6112 6238 6298
##    1    2    1    1    1    2    1
## 6329 6345 6358 6429 6454 6474 6481
##    2    1    1    1    1    1    2
## 6493 6521 6524 6526 6628 6636 6657
##    1    2    2    1    1    1    2
## 6660 6663 6664 6684 6687 6719 6746
##    1    1    2    2    1    2    1
## 6766 6783 6811 6833 6836 6842 6852
##    1    2    1    2    2    1    2
## 6870 6948 6977 6990 6992 7031 7047
##    2    2    1    5    2    2    2
## 7059 7104 7116 7144 7158 7204 7206
##    1    1    1    2    2    2    2
## 7231 7340 7361 7362 7421 7428 7463
##    1    1    2    1    2    2    2
## 7476 7488 7489 7551 7587 7725 7859
##    1    2    1    2    2    1    2
## 7904 7919 7939 7945 7993 8029 8062
```

```
##        2        1        1        1        2        2        1
##     8066     8114     8116     8154     8157     8158     8227
##        1        1        1        2        2        2        1
##     8247     8269     8283     8314     8317     8355     8373
##        2        1        2        1        2        2        1
##     8392     8412     8417     8447     8452     8469     8472
##        1        1        1        1        1        2        2
##     8524     8545     8597     8609     8612     8642     8664
##        2        2        1        2        2        1        2
##     8681     8687     8728     8761     8773     8779     8788
##        2        2        2        1        2        1        1
##     8808     8816     8850     8865     8872     8893     8909
##        1        1        1        2        1        2        1
##     8919     8975     9002     9073     9086     9106     9129
##        1        1        1        1        1        1        1
##     9148     9206     9263     9271     9306     9308     9391
##        1        1        1        2        1        1        2
##     9489     9532     9545     9585     9597     9619     9637
##        2        1        2        1        1        1        1
##     9661     9664     9704     9735     9767     9774     9793
##        1        1        1        1        1        1        1
##     9828     9831     9868     9870     9875     9885     9887
##        1        1        2        1        1        2        1
##     9945     9982     9983    10010    10035    10052    10055
##        1        1        1        1        1        1        1
##    10089    10139    10187    10206    10226    10270    10276
##        1        1        1        1        1        2        1
##    10283    10296    10304    10306    10314    10337    10341
##        1        1        1        1        1        1        1
##    10350    10370    10380    10405    10453    10514    10535
##        1        1        1        1        1        1        1
##    10562    10571    10578    10611    10626    10648    10709
##        1        1        1        1        1        2        1
##    10788    10825    10845    10850    10859    10922    10959
##        1        1        1        1        1        1        2
##    10970    10990    11057    11061    11074    11079    11140
##        2        1        1        1        1        2        1
##    11268    11324    11403    11427    11430    11467    11534
##        2        1        2        1        1        1        1
##    11543    11579    11589    11632    11740    11770    11813
##        2        1        1        1        1        1        1
##    11846    11856    11858    11908    11979    12025    12104
##        1        2        2        2        1        1        1
##    12112    12142    12157    12190    12200    12208    12215
##        1        1        1        1        2        2        1
##    12224    12230    12267    12277    12299    12321    12325
##        2        1        1        1        1        1        1
##    12399    12402    12455    12479    12486    12507    12521
##        2        1        1        1        1        1        2
##    12557    12565    12574    12585    12663    12755    12846
##        1        1        2        1        1        2        2
##    12859    12878    12907    12909    12977    13019    13094
##        1        1        1        1        2        1        1
##    13169    13171    13338    13509    13544    13589    13673
```

```
##         2         2         2         2         2         2         1
##     13714     13728     13782     13786     13808     13841     13890
##         2         1         1         2         1         2         1
##     13985     14069     14255     14394     14451     14471     14496
##         2         2         2         1         2         2         1
##     14504     14575     14758     14912     14918     14955     15035
##         1         1         2         2         1         1         1
##     15442     15506     15553     16025     16246     16356     16771
##         1         1         1         1         1         1         1
##     16794     16871     16910     17041     17078     17107     17112
##         1         1         1         1         1         1         1
##     17133     17160     17187     17214     17220     17257     17388
##         1         1         1         1         1         1         1
##     17453     17513     17518     17567     17650     17746     17790
##         1         1         1         1         1         1         1
##     17846     17856     17901     18046     18122     18277     18375
##         1         1         1         1         1         1         1
##     18382     18410     18470     18542     18563     18598     18621
##         1         1         1         1         1         1         1
##     18705     18758     18776     18882     19200     19329     19418
##         1         1         1         1         1         1         1
##     19439     19443     19594     19671     19743     19783     19825
##         1         1         1         1         1         1         1
##     19933     19973     19985     20114     20223     20249     20384
##         1         1         1         1         1         1         1
##     20435     20459     20491     20505     20571     20672     20689
##         1         1         1         1         1         1         1
##     20711     20750     20778     20834     20955     20982     21031
##         1         1         1         1         1         1         1
##     21045     21267     21357     21446     21602     21718     21766
##         1         1         1         1         1         1         1
##     21793     21802     21886     21891     21903     22062     22075
##         2         2         2         1         2         1         1
##     22099     22187     22218     22260     22286     22324     22342
##         2         2         1         2         2         2         2
##     22345     22374     22378     22427     22444     22652     22677
##         1         2         1         2         1         1         2
##     22691     22705     22769     22770     22796     22807     22817
##         2         2         1         2         2         2         2
##     22835     22899     22936     22953     23020     23047     23109
##         2         1         2         2         2         1         2
##     23127     23160     23172     23192     23226     23254     23281
##         1         1         2         2         2         2         2
##     23330     23390     23447     23480     23585     23608     23693
##         2         1         1         1         2         1         2
##     23713     23722     23789     23833     23843     23892     23967
##         2         2         1         2         2         1         1
##     24262     24552     24558     24803     25000     25417     25485
##         1         1         1         1         1         1         1
##     25868     25979     26065     26078     26136     26210     26359
##         1         1         2         2         1         1         1
##     26398     26413     26591     26617     26897     26911     27060
##         1         1         1         1         1         2         2
##     27094     27189     27202     27235     27672     27744     28076
```

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##         1         2         2         1         2         2         2
##     28096     28108     28272     28384     28477     28599     28735
##         1         2         2         2         1         2         1
##     28751     28871     28949     29152     29386     29505     29529
##         2         1         2         1         2         1         2
##     29775     30069     30102     30158     30179     30184     30207
##         2         1         1         1         1         1         1
##     30230     30288     30293     30301     30390     30407     30492
##         1         1         1         1         1         1         1
##     30494     30535     30589     30624     30643     30732     30764
##         1         1         2         1         1         2         1
##     30904     30955     30976     31061     31128     31166     31183
##         2         2         2         2         2         2         2
##     31397     31478     31609     31619     31786     31917     32042
##         2         2         2         1         2         2         1
##     32043     32059     32455     32468     32664     32745     32803
##         2         2         2         2         2         2         2
##     32903     32961     32992     33017     33243     33744     33880
##         2         2         1         2         2         2         2
##     34027     34121     34162     34230     34424     34443     34619
##         1         1         2         2         1         1         2
##     34671     34718     34795     34879     35019     35033     35180
##         2         1         1         2         1         2         2
##     35218     35223     35319     35350     35592     35731     36103
##         1         1         1         2         1         2         1
##     36118     36883     36988     37320     37720     37842     38400
##         1         1         1         1         1         1         1
##     38422     38530     38782     38927     38952     39014     39489
##         1         1         1         1         1         1         1
##     39559     40146     40978     41170     41537     41587     41831
##         1         1         1         1         1         1         1
##     41855     42258     42266     42294     42582     42585     42663
##         1         1         1         1         1         1         1
##     42683     42766     42778     42799     42839     42908     42992
##         1         1         1         1         1         1         1
##     42993     43054     43250     43308     43396     43547     44175
##         1         1         1         1         1         1         1
##     44177     44231     44571     44709     44813     44845     44996
##         1         1         1         1         2         2         1
##     45138     45158     45201     45245     45419     45443     45512
##         2         2         2         1         2         2         2
##     45532     45581     45907     45926     46582     46813     47275
##         2         2         2         2         1         1         1
##     47494     48177     48304     48332     48524     48604     48776
##         1         1         1         1         1         1         1
##     48914     49025     49043     49084     49122     49273     49893
##         1         1         1         1         1         1         1
##     49975     50218     50271     50277     50516     50660     50771
##         1         1         1         1         1         1         1
##     51250     52649     52742     53457     54418     54481     54617
##         1         1         1         1         1         2         2
##     54909     54975     55000     55594     55600     55694     55800
##         1         2         2         2         1         2         1
##     55861     55889     56060     56085     56091     56372     56524
```

```
##         1         2         2         2         2         2         2
##     56632     56725     56734     56747     56991     57397     57539
##         2         2         1         2         2         2         2
##     57692     57821     57848     57897     58040     58050     58060
##         2         2         1         3         2         4         2
##     58144     58228     58260     58475     58509     58732     58815
##         1         1         2         2         2         2         2
##     58938     59165     59275     59725     59839     60106     60140
##         2         2         2         2         2         2         2
##     60179     60224     60263     60409     60527     60575     60601
##         2         1         1         1         2         1         2
##     60694     60746     60871     61127     61207     61325     61358
##         1         1         2         2         1         2         1
##     61360     61376     61391     61868     61915     61928     62088
##         2         1         2         2         1         2         1
##     62101     62230     62433     62493     62532     62700     62742
##         2         2         2         1         1         2         1
##     62750     62782     62913     62914     62956     63032     63158
##         1         2         1         2         2         1         1
##     63289     63316     63495     63589     63661     63673     63739
##         1         2         2         1         1         1         1
##     63792     63809     63838     64407     64458     64478     64584
##         2         2         1         2         1         2         1
##     64695     64711     64786     64790     64956     65062     65135
##         1         2         1         2         1         1         2
##     65203     65254     65260     65367     65404     65436     65485
##         2         2         1         1         2         1         2
##     65809     66199     66312     66340     66355     66409     66469
##         2         1         1         2         2         2         2
##     66796     66888     67130     67134     67193     67404     67415
##         2         2         2         1         1         2         2
##     67559     67730     67976     68610     68769     68796     69486
##         2         2         1         2         1         2         2
##     70458     70754     70953     71578     71655     71994     73173
##         1         2         2         2         1         1         1
##     73411     73650     74334     75871     76500     76900     77115
##         1         2         1         1         1         1         2
##     77129     77867     78097     78857     79160     79426     80150
##         1         1         1         2         1         1         1
##     81238     81424     81428     81598     81870     82939     83492
##         2         1         2         2         1         2         1
##     83656     83781     83890     84045     84176     84328     84450
##         1         1         2         1         1         1         1
##     84664     84688     84796     85304     85372     85552     85661
##         2         1         1         1         1         1         2
##     85744     86382     86453     86499     86525     86764     87016
##         1         1         1         1         1         2         1
##     87159     87426     87782     88322     88425     88744     88807
##         1         2         1         1         1         1         1
##     88839     89083     89162     89208     89233     89263     89337
##         1         1         1         1         1         1         1
##     89390     89488     89607     89854     89966     90380     90513
##         1         1         2         1         2         1         1
##     90757     91102     91533     91583     92033     92078     92086
```

```
##      1      1      2      1      1      1      1
##  92413  92803  92880  93011  93101  93181  93201
##      1      1      2      1      1      1      1
##  93222  93500  94248  94476  94703  94726  94764
##      2      1      2      2      1      2      2
##  95272  95572  95694  95738  96159  96362  96504
##      1      1      1      2      2      2      2
##  97024  97194  97546  97597  97691  97752  97955
##      1      2      2      2      2      1      1
##  98248  98699  98709  99271  99293  99463  99525
##      1      2      2      2      2      2      1
##  99582 100526 100724 100857 101086 101247 101277
##      1      1      2      1      2      1      2
## 101652 101763 101931 102445 102746 102753 102863
##      2      2      1      2      2      2      1
## 103249 103350 103538 103879 104148 104355 104379
##      1      1      2      2      1      2      2
## 104415 104513 104565 105016 105966 105996 106051
##      2      1      1      2      2      2      2
## 106082 106160 106253 106575 106692 107007 107112
##      1      2      1      2      2      1      1
## 107145 107206 107353 107668 107789 107816 107821
##      1      2      1      2      2      1      2
## 107964 108249 108258 108639 108652 108686 109041
##      2      2      1      1      2      1      2
## 109155 109240 109463 109651 109734 109738 109750
##      1      2      2      2      1      2      2
## 109909 110234 110346 110405 110524 110671 110972
##      1      2      2      1      1      1      1
## 111017 111036 111331 111417 111491 111567 112195
##      2      2      1      1      2      2      2
## 112266 112627 112656 112686 112758 112810 112830
##      2      1      1      1      1      2      1
## 112839 112990 113002 113219 113227 113262 113470
##      1      1      2      1      2      1      2
## 113724 113847 113971 114113 114252 114436 114539
##      1      2      1      2      1      1      2
## 114575 114689 114772 114777 114959 115006 115135
##      1      1      2      1      1      1      2
## 115464 115499 115541 115693 115988 116058 116304
##      1      2      2      2      1      1      1
## 116377 116520 116561 116796 116807 116921 116950
##      1      2      1      2      1      1      1
## 117040 117160 117439 117662 117793 117902 118085
##      2      1      1      1      1      2      1
## 118087 118129 118459 118608 118818 118852 119006
##      1      1      1      1      1      1      1
## 119040 119184 119935 119992 120062 120084 120289
##      2      2      1      1      1      1      1
## 120498 120711 120842 121386 121651 121670 121792
##      2      2      1      1      1      1      1
## 121917 121927 122127 122162 122315 122660 123056
##      1      2      1      2      1      1      2
## 123198 123404 123430 123520 123687 124171 124196
```

```
##      1      1      2      1      1      1      1
##  124534 124982 125109 125298 125581 126095 126299
##      1      2      1      2      1      1      2
##  126905 126991 127012 127019 127606 127681 128676
##      1      1      1      1      1      1      2
##  128693 129077 129129 129456 129916 130350 130537
##      1      1      1      2      1      1      1
##  130879 131193 131200 131609 132307 132415 132931
##      1      1      1      2      1      1      2
##  133235 134502 134537 134572 134614 134751 134906
##      1      1      1      1      2      1      2
##  135503 135887 136458 136572 137243 137306 137936
##      1      2      1      1      1      1      2
##  138392 138416 139000 139407 139544 139863 139899
##      1      1      2      2      2      1      1
##  140493 141821 142204 142361 142432 142522 142560
##      1      1      1      2      2      1      1
##  142901 143470 143836 143845 145205 145242 145376
##      1      1      2      1      1      2      1
##  145602 145735 145912 146094 146392 146784 147425
##      1      1      1      1      1      1      1
##  147437 148278 148868 149791 149942 150479 151225
##      1      1      1      1      2      1      1
##  151812 152565 152695 152803 152952 153424 154144
##      2      1      1      2      2      1      1
##  154487 154511 154704 155358 155615 155851 156108
##      1      1      1      1      1      1      1
##  156258 156328 157415 157792 160458 162896 163139
##      1      1      1      1      1      1      1
##  164141 165115 165817 166142 166643 167397 168590
##      1      2      1      2      1      1      1
##  169105 170023 171577 173899 174285 174541 174849
##      1      1      1      1      1      1      1
##  174924 175870 176887 177870 178138 178340 179423
##      1      2      2      1      1      1      1
##  179620 179639 180065 180211 180547 180560 180678
##      2      1      1      1      1      1      1
##  180904 181232 181454 181685 181690 182070 182934
##      1      1      1      1      1      1      2
##  183068 183214 184265 184735 185515 185570 185911
##      1      1      1      1      1      1      1
##  186164 186277 186476 186523 186577 186742 187345
##      2      1      1      2      1      1      1
##  187375 187872 188192 188299 188326 188372 189455
##      1      1      1      1      1      2      2
##  190499 190501 190716 191265 191431 191711 191740
##      2      2      1      1      1      1      1
##  191805 192920 192971 193037 193470 193700 193787
##      1      2      2      1      1      2      1
##  194100 194470 195146 195270 195272 195430 195838
##      2      1      2      2      1      1      2
##  195932 196381 197228 197381 197535 197539 197940
##      1      2      2      2      1      2      1
##  198030 198248 198274 198630 198849 199188 199795
```

```
##         1         2         1         1         1         2         2
##    200484    200587    200630    200769    200850    201086    201718
##         2         2         1         2         2         2         2
##    201777    201854    202016    202113    202828    202965    203144
##         2         1         2         1         1         1         1
##    203261    203286    204256    204515    204783    205408    205514
##         1         2         1         1         2         2         1
##    205889    206145    206157    206810    207490    208534    209047
##         2         1         1         1         1         2         1
##    209190    209310    209572    209838    210507    210521    211174
##         1         1         1         1         1         1         1
##    212262    213415    213783    213926    214318    214335    216079
##         2         1         1         1         1         1         2
##    216169    216442    216673    217319    217418    218082    218540
##         1         2         1         1         1         2         1
##    218723    219845    219883    220296    220819    221442    221569
##         2         2         2         2         2         1         2
##    223017    223190    223385    223420    223460    223563    224392
##         2         1         2         2         1         2         2
##    224398    224599    224762    224821    227616    227831    228823
##         1         1         2         2         1         1         1
##    231665    232650    232771    235962    239333    239767    239867
##         1         1         1         1         2         2         2
##    243967    245300    245533    245866    246850    249000    250633
##         2         2         2         1         2         2         2
##    251267    251385    254100    255305    255335    256033    256333
##         2         1         2         1         2         2         2
##    256467    256617    257278    257445    259798    260596    261580
##         2         2         2         1         1         2         1
##    262775    262915    264524    265535    265557    266667    266880
##         1         2         2         2         2         2         1
##    267085    267266    268309    271355    274040    274633    275064
##         1         2         2         1         2         2         2
##    277533    279979    282420    282472    282483    282512    283611
##         2         2         2         2         2         2         2
##    284733    285339    285431    288446    289689    290811    291297
##         2         2         2         2         1         2         2
##    291864    298526    299824  304196.89    306044    307762  308902.02
##         2         2         2         2         2         2         2
##  310005.46    314805    316722    317090    317940    320493    320705
##         2         2         2         2         2         2         2
##    321033    321534    325285    329558    330602    336338    337515
##         2         2         2         2         2         2         2
##    340275    346219    346947    351008    354022    356443    363754
##         2         2         2         2         2         2         2
##    367710    369706    370949    374100    374906    376431    381356
##         2         2         2         2         2         1         2
##    382070    383570    384853  385529.95    388579  390653.04    392136
##         1         1         2         2         2         2         2
##    393628    396539    403696    406291    406664    409221    411447
##         2         2         2         2         2         1         2
##    413101    414299    414693    416970    417614    419086    419436
##         1         2         2         1         1         2         1
##    420235    420870    420932    421800    423158    423200    423497
```

```
##         1         1         1         2         1         1         1
##    424210    424395    428401    433007    433283    438311    439885
##         2         2         2         2         2         2         1
##    444104    444968    447280    448035    448980    449571    449623
##         1         2         1         2         1         2         1
##    449781    451605    453322    454700    454726    454814    465279
##         2         1         2         1         1         1         2
##    470399    505867    509202    512714    514850    516930    516974
##         2         1         1         1         1         1         1
##    517000    518756    527560    536531    540205    544080    546220
##         1         1         1         1         1         1         1
##    547861    548291    548498    548500    549066    557747    566696
##         2         1         1         1         1         1         2
##    567564    587099    595594    615829    616796    629029    631625
##         2         2         2         2         2         1         1
##    634672    637787    638189    638248    644473    647678    650638
##         1         2         1         2         1         1         1
##    650743    652651    659880    660213    660611    681459    682860
##         1         1         2         1         2         2         1
##    682895    682923    684273    689060    697468    700988    704246
##         1         2         1         1         1         2         2
##    722572    723800    745513    805000    813000    818000    826000
##         2         2         2         1         1         1         1
##    835000    840000    848000    851779    866000    870000    875000
##         1         1         1         1         1         1         1
##    889000    893000    898000    910950    913000    916000    917000
##         1         1         1         1         1         1         1
##    937000    941000    942000    948713    953000    962000    963000
##         1         1         1         1         1         1         1
##    969000    975000    975802 976341.95    977000    983000    984000
##         1         1         1         1         1         1         1
##    987025    991000    991361    995000    999000   1005000   1016000
##         1         1         1         1         1         1         1
## 1016117.04   1017000   1033000   1033366   1039000   1040000   1041000
##         1         2         1         1         1         1         1
##   1056000   1058000   1064000   1079000   1082000   1084456   1085000
##         2         1         1         1         2         1         1
##   1096000   1096971   1104660   1106000   1108000   1109000   1120000
##         1         1         1         1         1         1         2
##   1132000   1145000   1181000   1194000   1203000   1205000   1216000
##         1         1         1         1         1         1         1
##   1227000   1245000   1268000   1275000   1278039   1298000   1305000
##         1         1         1         1         1         1         1
##   1329000   1339000   1343442   1363000   1380000   1403000   1404000
##         1         1         1         1         1         1         1
##   1427398   1428000   1477530   1513338   1521001   1537984   1561153
##         1         1         1         1         1         1         1
##   1565059   1582435   1586127   1598123   1613411   1625493   1631112
##         1         1         1         1         1         1         1
##   1691639   1714412   1747933   1834217   1894224      <NA>
##         1         1         1         1         1      9347
```

- Observamos que tenemos **9347 valores perdidos**.Guardamos en la variable **idx** los índices de los registros con valores **NA** de la variable **Value**.

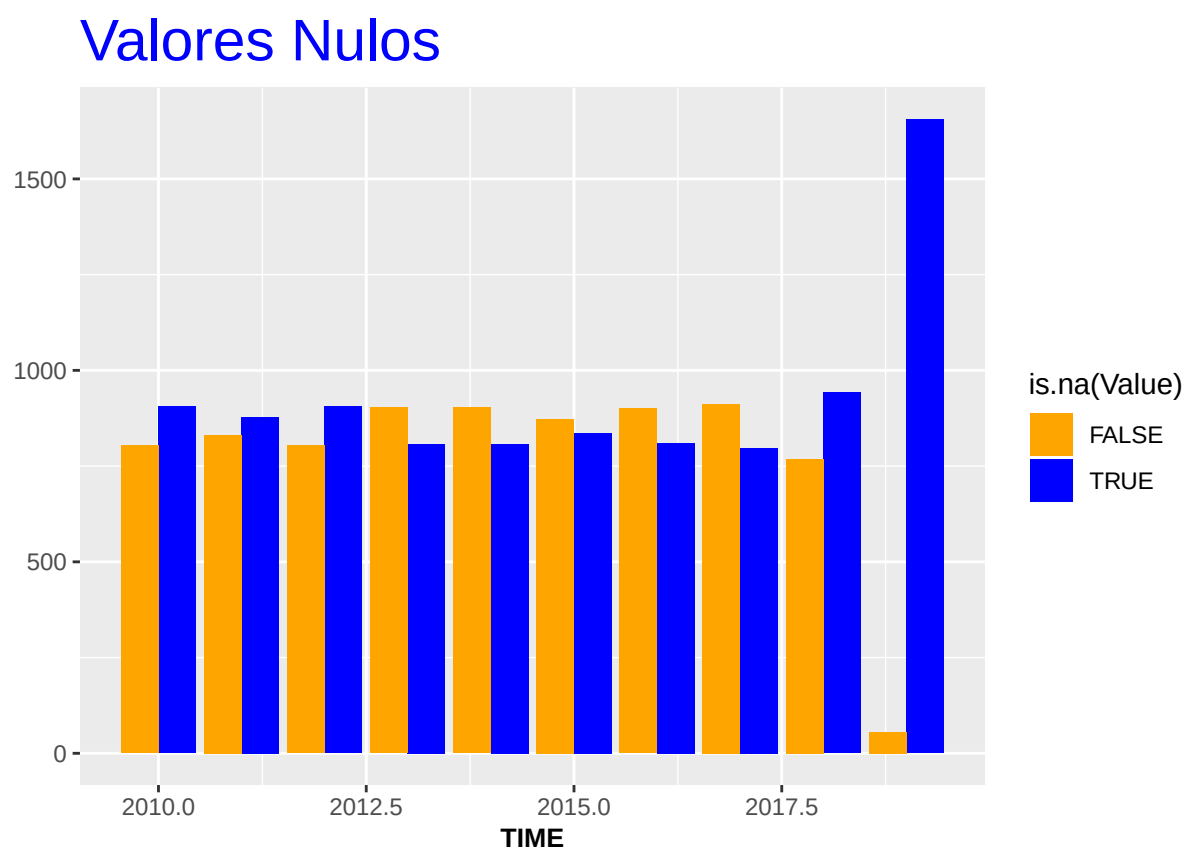
```
idx<-which(is.na(enfermeria$Value))
length(idx)
```

```
## [1] 9347
```

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

```
library(ggplot2)
library(scales)
g = ggplot(enfermeria, 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.
```

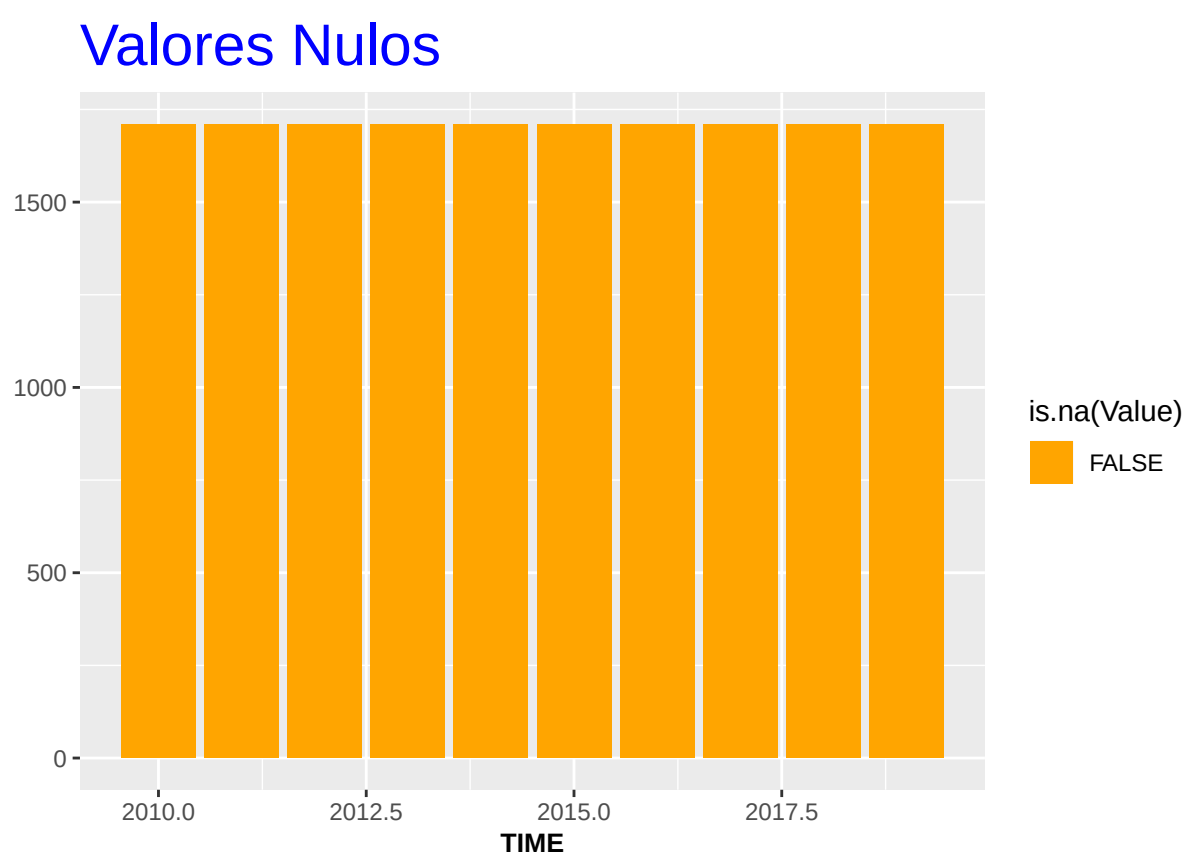
```
## Suggestions and bug-reports can be submitted at: https://github.com/statistikat/VIM/issues
##
## Attaching package: 'VIM'
## The following object is masked from 'package:datasets':
##
##     sleep
```

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

- Comprobamos que no tenemos valores nulos después de la imputación

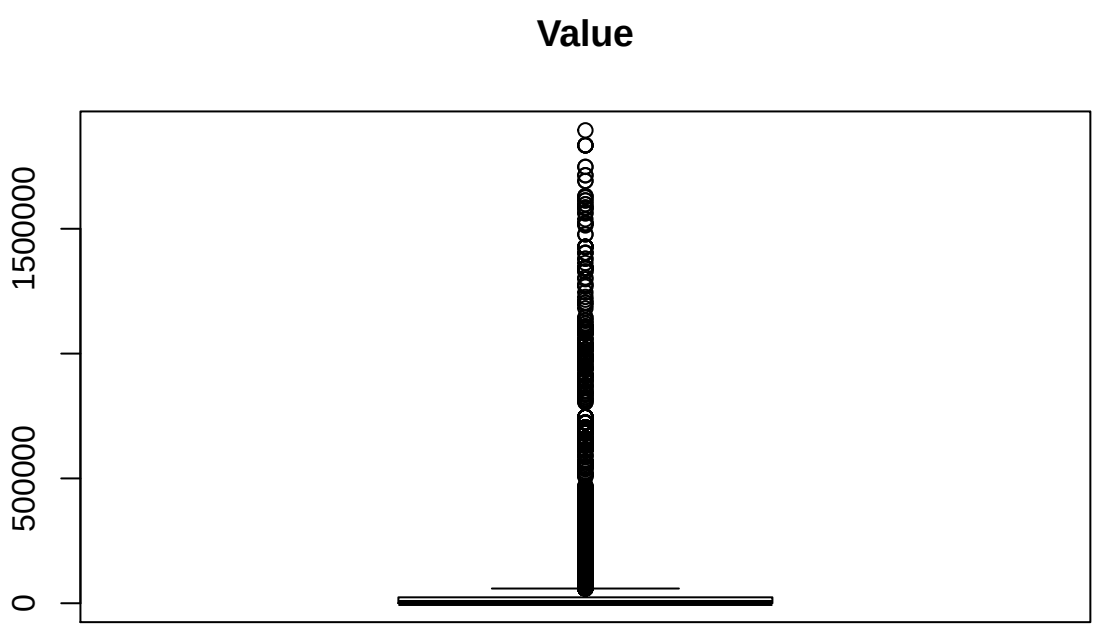
```
g = ggplot(enfermeria, aes(TIME, fill=is.na(Value)) ) +
labs(title = "Valores Nulos")+ylab("") +
theme(plot.title = element_text(size = rel(2), colour = "blue"))

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(enfermeria$Value, main="Value")
```



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

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

```
##
## 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
## 1710 1710 1710 1710 1710 1710 1710 1710 1710 1710
```

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

```
##
##                                      Albania
##                                          450
##                                      Austria
##                                          450
##                                      Belgium
##                                          450
##                                     Bulgaria
##                                          450
##                                      Croatia
##                                          450
##                                       Cyprus
##                                          450
##                                      Czechia
##                                          450
##                                      Denmark
##                                          450
##                                      Estonia
```

```
##                                             450
##                                          Finland
##                                             450
##                                           France
##                                             450
##                                 France (metropolitan)
##                                             450
## Germany (until 1990 former territory of the FRG)
##                                             450
##                                           Greece
##                                             450
##                                          Hungary
##                                             450
##                                          Iceland
##                                             450
##                                          Ireland
##                                             450
##                                            Italy
##                                             450
##                                           Latvia
##                                             450
##                                      Liechtenstein
##                                             450
##                                        Lithuania
##                                             450
##                                       Luxembourg
##                                             450
##                                            Malta
##                                             450
##                                       Montenegro
##                                             450
##                                      Netherlands
##                                             450
##                                   North Macedonia
##                                             450
##                                           Norway
##                                             450
##                                           Poland
##                                             450
##                                         Portugal
##                                             450
##                                          Romania
##                                             450
##                                           Serbia
##                                             450
##                                         Slovakia
##                                             450
##                                         Slovenia
##                                             450
##                                            Spain
##                                             450
##                                           Sweden
##                                             450
##                                      Switzerland
```

```
##                                         450
##                                      Turkey
##                                         450
##                                United Kingdom
##                                         450
```

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

```
##
##              Inhabitants per ...                          Number
##                             5700                            5700
## Per hundred thousand inhabitants
##                             5700
```

```
table(enfermeria$WSTATUS, useNA = "ifany")
```

```
##
##  Licensed to practice            Practising Professionally active
##                  5700                  5700                   5700
```

```
table(enfermeria$ISCO08, useNA = "ifany")
```

```
##
##                                                                          Nurses
##                                                                            3420
##                                                                 Nurses and midwives
##                                                                            3420
## Nurses, midewives, health care assistants and home-based personal care workers
##                                                                            3420
##                                                               Nursing professionals
##                                                                            3420
##                                                 Nursing professionals and midwives
##                                                                            3420
```

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(enfermeria, file="Personal_Enfermeria_Cuidados_clean.csv", row.names = FALSE)
```