Assignment3

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Assignment3

This assignment will clean up and basically summarize the data given.

```
######## read the data####
dataset <- read.csv("C:/Users/78209/OneDrive/ /price_index_Feb20201 (1).csv",header=TRUE)
```

```
#####Just look at the first five pieces of data###
head(dataset, n=5)
```

```
##        SER_REF TIME_REF DATA_VAL STATUS UNITS Subject
## 1 CPIM.SE1041F  2006.11     1000  FINAL Index     CPI
## 2 CPIM.SE1041F  2006.12      995  FINAL Index     CPI
## 3 CPIM.SE1041F  2007.01     1007  FINAL Index     CPI
## 4 CPIM.SE1041F  2007.02     1012  FINAL Index     CPI
## 5 CPIM.SE1041F  2007.03     1020  FINAL Index     CPI
##                               Group Series_title_1             Series_title_2
## 1 CPI Monthly Rents (Broad Regions)       Auckland Actual rentals for housing
## 2 CPI Monthly Rents (Broad Regions)       Auckland Actual rentals for housing
## 3 CPI Monthly Rents (Broad Regions)       Auckland Actual rentals for housing
## 4 CPI Monthly Rents (Broad Regions)       Auckland Actual rentals for housing
## 5 CPI Monthly Rents (Broad Regions)       Auckland Actual rentals for housing
##   Series_title_3
## 1           Flow
## 2           Flow
## 3           Flow
## 4           Flow
## 5           Flow
```

```
#####Observe the overall properties of the dataset###
summary(dataset)
```

```
##    SER_REF             TIME_REF       DATA_VAL       STATUS
##  Length:1203        Min.   :2006   Min.   : 969   Length:1203
##  Class :character   1st Qu.:2010   1st Qu.:1108   Class :character
##  Mode  :character   Median :2014   Median :1216   Mode  :character
##                     Mean   :2014   Mean   :1253
##                     3rd Qu.:2017   3rd Qu.:1392
##                     Max.   :2021   Max.   :1683
```

```
##     UNITS              Subject             Group           Series_title_1
##  Length:1203        Length:1203        Length:1203        Length:1203
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##  Series_title_2     Series_title_3
##  Length:1203        Length:1203
##  Class :character   Class :character
##  Mode  :character   Mode  :character
##
##
##
```

```
#######View detailed data types and other information##
str(dataset)
```

```
## 'data.frame':    1203 obs. of  10 variables:
##  $ SER_REF       : chr  "CPIM.SE1041F" "CPIM.SE1041F" "CPIM.SE1041F" "CPIM.SE1041F" ...
##  $ TIME_REF      : num  2006 2006 2007 2007 2007 ...
##  $ DATA_VAL      : int  1000 995 1007 1012 1020 1023 1045 1033 1037 1058 ...
##  $ STATUS        : chr  "FINAL" "FINAL" "FINAL" "FINAL" ...
##  $ UNITS         : chr  "Index" "Index" "Index" "Index" ...
##  $ Subject       : chr  "CPI" "CPI" "CPI" "CPI" ...
##  $ Group         : chr  "CPI Monthly Rents (Broad Regions)" "CPI Monthly Rents (Broad Regions)" "CPI
##  $ Series_title_1: chr  "Auckland" "Auckland" "Auckland" "Auckland" ...
##  $ Series_title_2: chr  "Actual rentals for housing" "Actual rentals for housing" "Actual rentals fo
##  $ Series_title_3: chr  "Flow" "Flow" "Flow" "Flow" ...
```

```
#######Check the price variable for missing values####
sum(is.na(dataset$DATA_VAL))
```

```
## [1] 0
```

```
#######Check all columns for missing values####
colSums(is.na(dataset))
```

```
##        SER_REF       TIME_REF       DATA_VAL         STATUS          UNITS
##              0              0              0              0              0
##        Subject          Group Series_title_1 Series_title_2 Series_title_3
##              0              0              0              0              0
```

```
########Calculate the size of a data set####
object.size(dataset)
```

```
## 94776 bytes
```

```
print(object.size(dataset),units="Mb")
```

```
## 0.1 Mb
```

```
##########Create a data table with only SER_REF and DATA_VAL columns######
classes <- sapply(dataset, class)
classes[c(-1,-3)] <- rep("NULL", length(classes)-2)
data <- read.csv("C:/Users/78209/OneDrive/ /price_index_Feb20201 (1).csv", colClasses = classes)
```

```
######The number of title1 data in the Rest of North Island was counted###
table(dataset$Series_title_1 %in% c('Rest of North Island'))
```

```
##
## FALSE  TRUE
##  1031   172
```

```
######Use the Freq function in the DescTools package to generate a frequency distribution table about v
library(DescTools)
```

```
## Warning:   'DescTools' R 4.2.2
```

```
price <- Freq(dataset$DATA_VAL)
price
```

```
##                  level  freq   perc  cumfreq  cumperc
## 1          [950,1e+03]    12   1.0%       12     1.0%
## 2     (1e+03,1.05e+03]    71   5.9%       83     6.9%
## 3   (1.05e+03,1.1e+03]   195  16.2%      278    23.1%
## 4   (1.1e+03,1.15e+03]   162  13.5%      440    36.6%
## 5   (1.15e+03,1.2e+03]   114   9.5%      554    46.1%
## 6   (1.2e+03,1.25e+03]   113   9.4%      667    55.4%
## 7   (1.25e+03,1.3e+03]    76   6.3%      743    61.8%
## 8   (1.3e+03,1.35e+03]    72   6.0%      815    67.7%
## 9   (1.35e+03,1.4e+03]   109   9.1%      924    76.8%
## 10  (1.4e+03,1.45e+03]    93   7.7%    1'017    84.5%
## 11  (1.45e+03,1.5e+03]    68   5.7%    1'085    90.2%
## 12  (1.5e+03,1.55e+03]    84   7.0%    1'169    97.2%
## 13  (1.55e+03,1.6e+03]    17   1.4%    1'186    98.6%
## 14  (1.6e+03,1.65e+03]    12   1.0%    1'198    99.6%
## 15  (1.65e+03,1.7e+03]     5   0.4%    1'203   100.0%
```

```
#######Just look at Series titles 1,2,3,To observe the specific information and state of the product##
x <- as.matrix(dataset[, 8:10])
x
```

```
##         Series_title_1         Series_title_2               Series_title_3
##    [1,] "Auckland"             "Actual rentals for housing" "Flow"
##    [2,] "Auckland"             "Actual rentals for housing" "Flow"
##    [3,] "Auckland"             "Actual rentals for housing" "Flow"
##    [4,] "Auckland"             "Actual rentals for housing" "Flow"
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## [1202,] "National"             "Actual rentals for housing" "Stock"
## [1203,] "National"             "Actual rentals for housing" "Stock"
```

```
##### Use the factor function for column "Series_title_1"

area<-factor(c('Auckland','Wellington','Rest of North Island','Canterbury','Rest of South Island','Nati
class(area)
```

```
## [1] "factor"
```

```
levels(area)
```

```
## [1] "Auckland"             "Canterbury"           "National"
## [4] "Rest of North Island" "Rest of South Island" "Wellington"
```

```
nlevels(area)
```

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

```
#1.reading data
data<- read.csv("C:/Users/78209/OneDrive/ /price_index_Feb20201 (1).csv",header = T)
colnames(data)
```

```
##  [1] "SER_REF"        "TIME_REF"       "DATA_VAL"       "STATUS"
##  [5] "UNITS"          "Subject"        "Group"          "Series_title_1"
##  [9] "Series_title_2" "Series_title_3"
```

```
table(data$SER_REF)  #There are seven categories of items
```

```
##
## CPIM.SE1041F CPIM.SE2041F CPIM.SE3041F CPIM.SE5041F CPIM.SE6041F CPIM.SE9041F
##          172          172          172          172          172          172
## CPIM.SE9041S
##          171
```

```
str(data) #View the properties of the variable
```

```
## 'data.frame':    1203 obs. of  10 variables:
##  $ SER_REF       : chr  "CPIM.SE1041F" "CPIM.SE1041F" "CPIM.SE1041F" "CPIM.SE1041F" ...
##  $ TIME_REF      : num  2006 2006 2007 2007 2007 ...
##  $ DATA_VAL      : int  1000 995 1007 1012 1020 1023 1045 1033 1037 1058 ...
##  $ STATUS        : chr  "FINAL" "FINAL" "FINAL" "FINAL" ...
##  $ UNITS         : chr  "Index" "Index" "Index" "Index" ...
##  $ Subject       : chr  "CPI" "CPI" "CPI" "CPI" ...
##  $ Group         : chr  "CPI Monthly Rents (Broad Regions)" "CPI Monthly Rents (Broad Regions)" "CPI
##  $ Series_title_1: chr  "Auckland" "Auckland" "Auckland" "Auckland" ...
##  $ Series_title_2: chr  "Actual rentals for housing" "Actual rentals for housing" "Actual rentals fo
##  $ Series_title_3: chr  "Flow" "Flow" "Flow" "Flow" ...
```

```
data$DATA_VAL<-as.numeric(data$DATA_VAL)
class(data$DATA_VAL)
```

```
## [1] "numeric"
```

```
#Calculate the average of the prices of seven categories of items
x<-list(a=data$DATA_VAL[which(data$SER_REF=="CPIM.SE1041F")],
        b=data$DATA_VAL[which(data$SER_REF=="CPIM.SE2041F")],
        c=data$DATA_VAL[which(data$SER_REF=="CPIM.SE3041F")],
        d=data$DATA_VAL[which(data$SER_REF=="CPIM.SE5041F")],
        e=data$DATA_VAL[which(data$SER_REF=="CPIM.SE6041F")],
        f=data$DATA_VAL[which(data$SER_REF=="CPIM.SE9041F")],
        g=data$DATA_VAL[which(data$SER_REF=="CPIM.SE9041S")])
#Construct a matrix of X with the categories and values corresponding to X
#Take the mean of the elements in x
sapply(x,mean)
```

```
##        a        b        c        d        e        f        g
## 1279.773 1263.564 1234.849 1262.471 1221.855 1258.099 1250.930
```