

# Course Project 1

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## Procesamiento

```
knitr::opts_chunk$set(echo = TRUE)
setwd("D:/ONLINE/COURSERA/EXPLORATORY DA/COURSERA_EDA/P1")
unzip("exdata_data_household_power_consumption.zip")
data <- read.csv("household_power_consumption.txt", sep = ";")

data$Date2 <- as.Date(as.character(data$Date), format = "%d/%m/%Y")
data$Datetime <- as.POSIXct(paste(data$Date, data$Time), format = "%d/%m/%Y %H:%M:%S")

data[data$Global_active_power=="?", "Global_active_power"] = NA
data[data$Global_reactive_power=="?", "Global_reactive_power"] = NA
data[data$Voltage=="?", "Voltage"] = NA
data[data$Global_intensity=="?", "Global_intensity"] = NA
data[data$Sub_metering_1=="?", "Sub_metering_1"] = NA
data[data$Sub_metering_2=="?", "Sub_metering_2"] = NA
# data[data$Sub_metering_3=="?", "Sub_metering_3"] = NA

data$Global_active_power <- as.numeric(data$Global_active_power)
data$Global_reactive_power <- as.numeric(data$Global_reactive_power)
data$Voltage <- as.numeric(data$Voltage)
data$Global_intensity <- as.numeric(data$Global_intensity)
data$Sub_metering_1 <- as.numeric(data$Sub_metering_1)
data$Sub_metering_2 <- as.numeric(data$Sub_metering_2)
data$Sub_metering_3 <- as.numeric(data$Sub_metering_3)

dataf <- subset(data, Date2 >= as.Date("2007-02-01") & Date2 <= as.Date("2007-02-02"))
```

## Variables

URL : Dataset Electric power consumption

- Date: Date in format dd/mm/yyyy
- Time: time in format hh:mm:ss
- Global\_active\_power: household global minute-averaged active power (in kilowatt)
- Global\_reactive\_power: household global minute-averaged reactive power (in kilowatt)
- Voltage: minute-averaged voltage (in volt)
- Global\_intensity: household global minute-averaged current intensity (in ampere)
- Sub\_metering\_1: energy sub-metering No. 1 (in watt-hour of active energy). It corresponds to the kitchen, containing mainly a dishwasher, an oven and a microwave (hot plates are not electric but gas powered).
- Sub\_metering\_2: energy sub-metering No. 2 (in watt-hour of active energy). It corresponds to the laundry room, containing a washing-machine, a tumble-drier, a refrigerator and a light.
- Sub\_metering\_3: energy sub-metering No. 3 (in watt-hour of active energy). It corresponds to an electric water-heater and an air-conditioner.

```
head(dataf, 5)
```

```
##           Date      Time Global_active_power Global_reactive_power Voltage
## 66637 1/2/2007 00:00:00           0.326           0.128 243.15
## 66638 1/2/2007 00:01:00           0.326           0.130 243.32
## 66639 1/2/2007 00:02:00           0.324           0.132 243.51
## 66640 1/2/2007 00:03:00           0.324           0.134 243.90
## 66641 1/2/2007 00:04:00           0.322           0.130 243.16
##           Global_intensity Sub_metering_1 Sub_metering_2 Sub_metering_3      Date2
## 66637                1.4              0              0              0 2007-02-01
## 66638                1.4              0              0              0 2007-02-01
## 66639                1.4              0              0              0 2007-02-01
## 66640                1.4              0              0              0 2007-02-01
## 66641                1.4              0              0              0 2007-02-01
##           Datetime
## 66637 2007-02-01 00:00:00
## 66638 2007-02-01 00:01:00
## 66639 2007-02-01 00:02:00
## 66640 2007-02-01 00:03:00
## 66641 2007-02-01 00:04:00
```

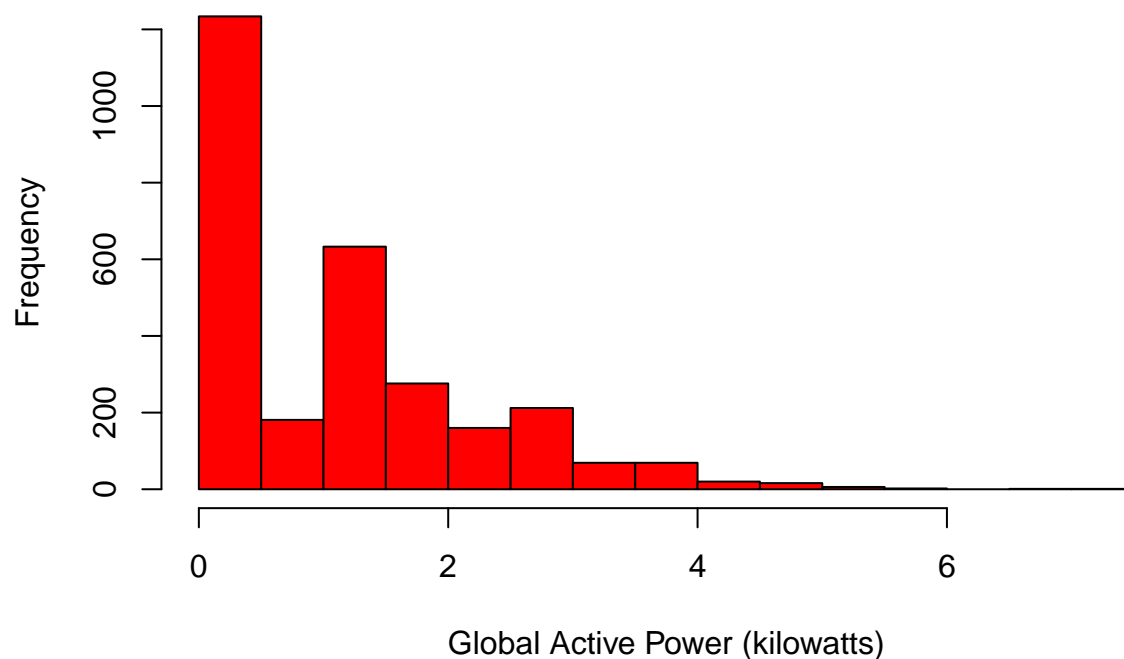
```
as.data.frame(colSums(is.na(dataf)))
```

```
##           colSums(is.na(dataf))
## Date              0
## Time              0
## Global_active_power 0
## Global_reactive_power 0
## Voltage            0
## Global_intensity    0
## Sub_metering_1      0
## Sub_metering_2      0
## Sub_metering_3      0
## Date2              0
## Datetime           0
```

## Plot 1

```
hist(x = dataf$Global_active_power,
     breaks = 12,
     col = "red",
     main = "Global Active Power",
     xlab = "Global Active Power (kilowatts)"
)
```

## Global Active Power



```
dev.copy(png, file = "plot1.png", width = 480, height = 480)
```

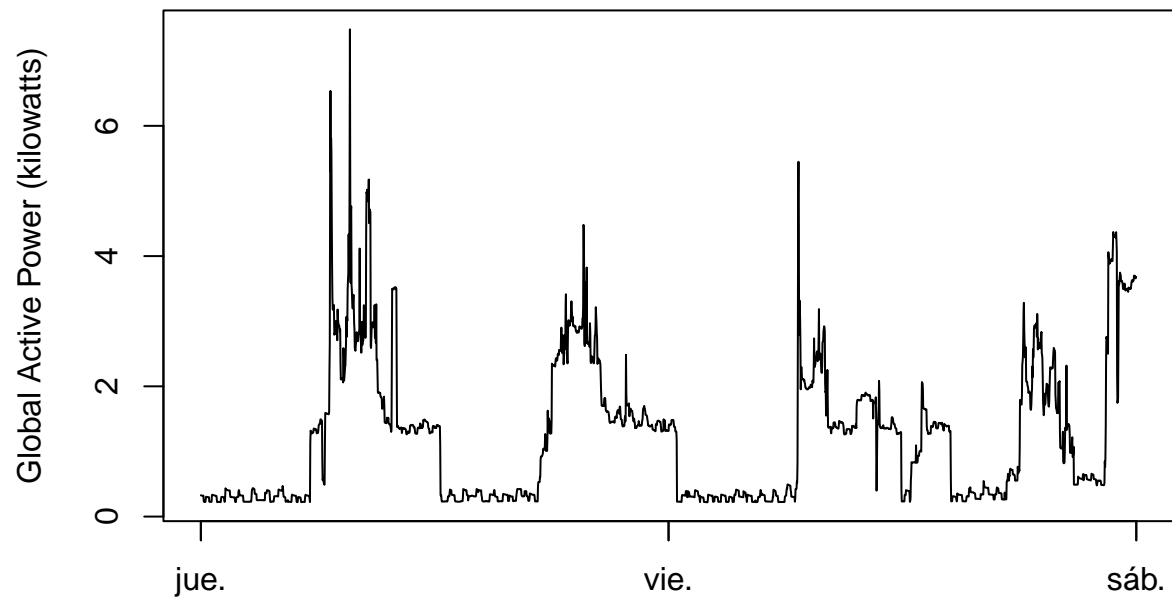
```
## png  
## 3
```

```
dev.off()
```

```
## pdf  
## 2
```

## Plot 2

```
# dev.new(width = 480, height = 480, unit = "px")  
plot(x = dataf$Datetime,  
     y = dataf$Global_active_power,  
     type = "l",  
     main = "",  
     ylab = "Global Active Power (kilowatts)",  
     xlab = ""  
)
```



```
dev.copy(png, file = "plot2.png", width = 480, height = 480)
```

```
## png
## 3
```

```
dev.off()
```

```
## pdf
## 2
```

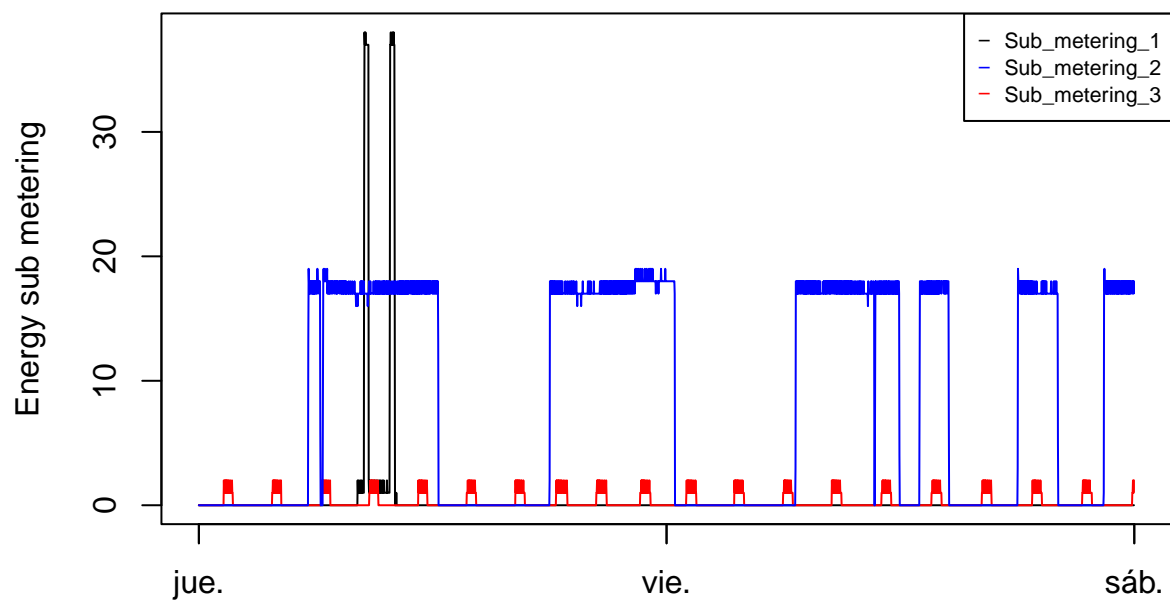
## Plot 3

```
# dev.new(width = 480, height = 480, unit = "px")
plot(x = dataf$Datetime,
     y = dataf$Sub_metering_1,
     type = "l",
     main = "",
     ylab = "Energy sub metering",
     xlab = "",
     col = "black"
)
points(x = dataf$Datetime,
```

```

    y = dataf$Sub_metering_2,
    type = "l",
    col = "red"
  )
points(x = dataf$Datetime,
       y = dataf$Sub_metering_3,
       type = "l",
       col = "blue"
)
legend(x = "topright",
       cex = 0.7,
       pch = "-",
       col = c("black", "blue", "red"),
       legend = c("Sub_metering_1", "Sub_metering_2", "Sub_metering_3")
)

```



```

dev.copy(png, file = "plot3.png", width = 480, height = 480)

```

```

## png
## 3

```

```

dev.off()

```

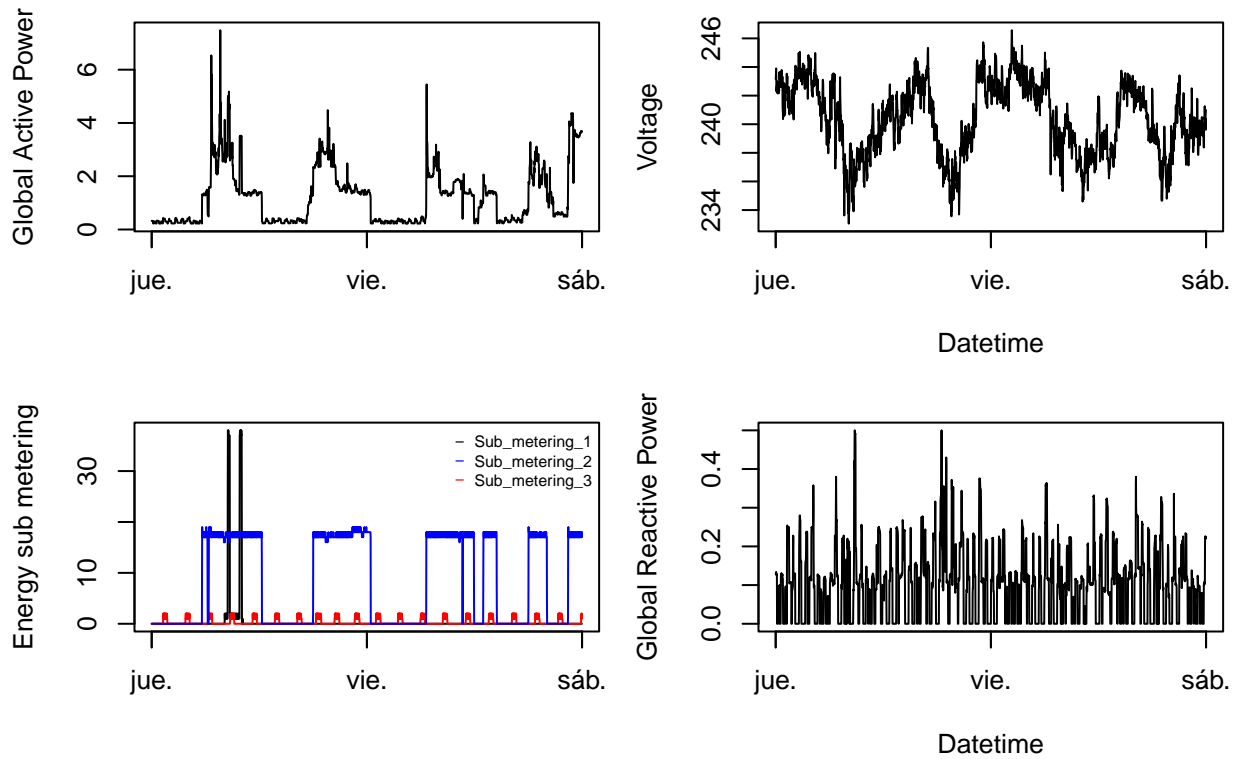
```

## pdf
## 2

```

## Plot 4

```
# dev.new(width = 480, height = 480, unit = "px")
par(mfrow = c(2, 2), mar = c(4, 4, 2, 1), oma = c(0, 0, 2, 0))
with(dataf, {
  plot(Datetime, Global_active_power, ylab = "Global Active Power", type = "l", xlab = "")
  plot(Datetime, Voltage, ylab = "Voltage", type = "l")
  plot(x = dataf$Datetime,
       y = dataf$Sub_metering_1,
       type = "l",
       main = "",
       ylab = "Energy sub metering",
       xlab = "",
       col = "black"
  )
  points(x = dataf$Datetime,
        y = dataf$Sub_metering_2,
        type = "l",
        col = "red"
  )
  points(x = dataf$Datetime,
        y = dataf$Sub_metering_3,
        type = "l",
        col = "blue"
  )
  legend(x = "topright",
        cex = 0.6,
        pch = "-",
        col = c("black", "blue", "red"),
        legend = c("Sub_metering_1", "Sub_metering_2", "Sub_metering_3"), bty = "n"
  )
  plot(Datetime, Global_reactive_power, ylab = "Global Reactive Power", type = "l")
})
```



```
dev.copy(png, file = "plot4.png", width = 480, height = 480)
```

```
## png
## 3
```

```
dev.off()
```

```
## pdf
## 2
```