Facebook_EDA

2023-09-29

Set Working Directory

First, set the working directory to the location where your data is stored on your computer. Uncomment and modify the `setwd` line as needed.

```
setwd("~/Desktop/MA575/GroupProject/facebook-metrics")
```

Data Import and Exploration

Read Data

Let's start by reading the data from a CSV file using a semicolon as the delimiter.

```
# Read data from a CSV file using semicolon as delimiter
fc_data <- read.csv("./data/dataset_Facebook.csv", header=TRUE, as.is=TRUE, sep=';')
```

Check Missing Values

```
# Summary of each column
summary(fc_data)
```

```
##  Page.total.likes     Type              Category      Post.Month
##  Min.   : 81370   Length:500         Min.   :1.00   Min.   : 1.000
##  1st Qu.:112676   Class :character   1st Qu.:1.00   1st Qu.: 4.000
##  Median :129600   Mode  :character   Median :2.00   Median : 7.000
##  Mean   :123194                      Mean   :1.88   Mean   : 7.038
##  3rd Qu.:136393                      3rd Qu.:3.00   3rd Qu.:10.000
##  Max.   :139441                      Max.   :3.00   Max.   :12.000
##
##   Post.Weekday    Post.Hour          Paid        Lifetime.Post.Total.Reach
##  Min.   :1.00   Min.   : 1.00   Min.   :0.0000   Min.   :   238
##  1st Qu.:2.00   1st Qu.: 3.00   1st Qu.:0.0000   1st Qu.:  3315
##  Median :4.00   Median : 9.00   Median :0.0000   Median :  5281
##  Mean   :4.15   Mean   : 7.84   Mean   :0.2786   Mean   : 13903
##  3rd Qu.:6.00   3rd Qu.:11.00   3rd Qu.:1.0000   3rd Qu.: 13168
##  Max.   :7.00   Max.   :23.00   Max.   :1.0000   Max.   :180480
##                                 NA's   :1
##  Lifetime.Post.Total.Impressions Lifetime.Engaged.Users Lifetime.Post.Consumers
##  Min.   :    570                 Min.   :    9.0        Min.   :    9.0
##  1st Qu.:   5695                 1st Qu.:  393.8        1st Qu.:  332.5
```

```
##  Median :   9051                Median :  625.5        Median :  551.5
##  Mean   :  29586                Mean   :  920.3        Mean   :  798.8
##  3rd Qu.:  22086                3rd Qu.: 1062.0        3rd Qu.:  955.5
##  Max.   :1110282                Max.   :11452.0        Max.   :11328.0
##
##  Lifetime.Post.Consumptions
##  Min.   :    9.0
##  1st Qu.:  509.2
##  Median :  851.0
##  Mean   : 1415.1
##  3rd Qu.: 1463.0
##  Max.   :19779.0
##
##  Lifetime.Post.Impressions.by.people.who.have.liked.your.Page
##  Min.   :    567
##  1st Qu.:   3970
##  Median :   6256
##  Mean   :  16766
##  3rd Qu.:  14860
##  Max.   :1107833
##
##  Lifetime.Post.reach.by.people.who.like.your.Page
##  Min.   :  236
##  1st Qu.: 2182
##  Median : 3417
##  Mean   : 6585
##  3rd Qu.: 7989
##  Max.   :51456
##
##  Lifetime.People.who.have.liked.your.Page.and.engaged.with.your.post
##  Min.   :   9.0
##  1st Qu.: 291.0
##  Median : 412.0
##  Mean   : 610.0
##  3rd Qu.: 656.2
##  Max.   :4376.0
##
##     comment             like            share        Total.Interactions
##  Min.   :  0.000   Min.   :   0.0   Min.   :  0.00   Min.   :   0.0
##  1st Qu.:  1.000   1st Qu.:  56.5   1st Qu.: 10.00   1st Qu.:  71.0
##  Median :  3.000   Median : 101.0   Median : 19.00   Median : 123.5
##  Mean   :  7.482   Mean   : 177.9   Mean   : 27.27   Mean   : 212.1
##  3rd Qu.:  7.000   3rd Qu.: 187.5   3rd Qu.: 32.25   3rd Qu.: 228.5
##  Max.   :372.000   Max.   :5172.0   Max.   :790.00   Max.   :6334.0
##                    NA's   :1        NA's   :4
```

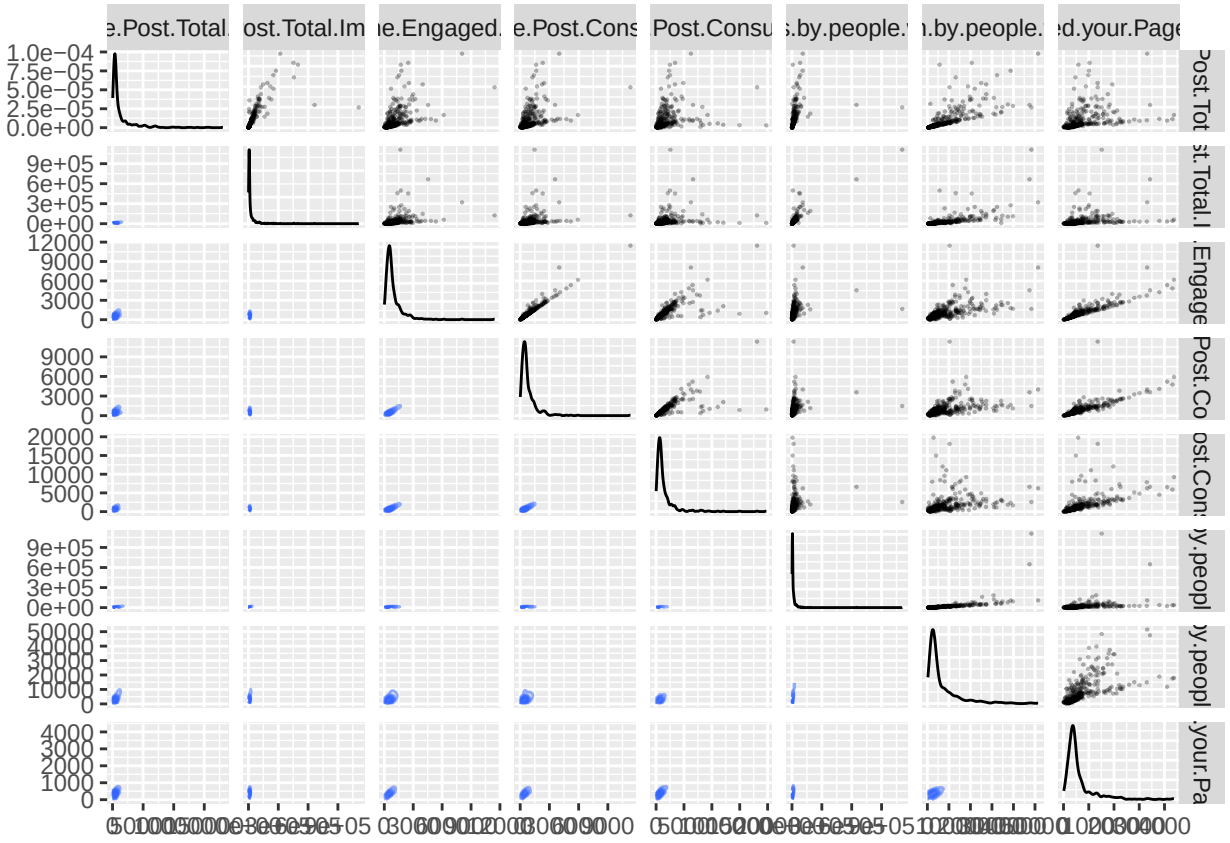
- NA values in variable “Paid”,“Like”,“share”.
- In total 500 observations and 19 variables including categorical variables.
- Original dataset is clean enought for later analysis.

Data Visualization

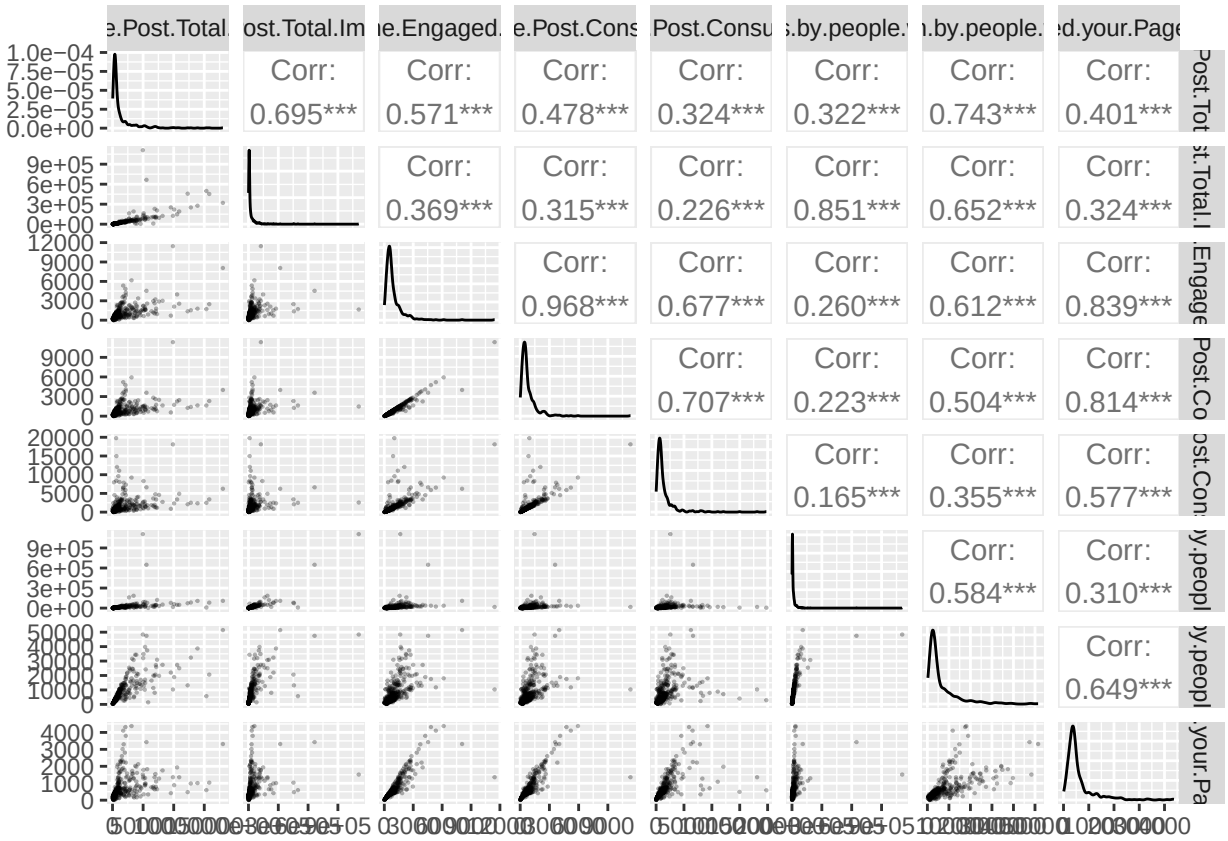
Scatterplot Matrix using ggplot2

```
temp_data<-fc_data %>% select(starts_with("Lifetime"))

ggpairs(temp_data,
        lower=list(continuous=wrap("density", alpha=0.5), combo="box"),
        upper=list(continuous=wrap("points", alpha=0.3, size=0.1)))
```




```
ggpairs(temp_data,
        lower=list(continuous=wrap("points", alpha=0.3, size=0.1)),
        upper=list(continuous=wrap("cor", size=4)))
```



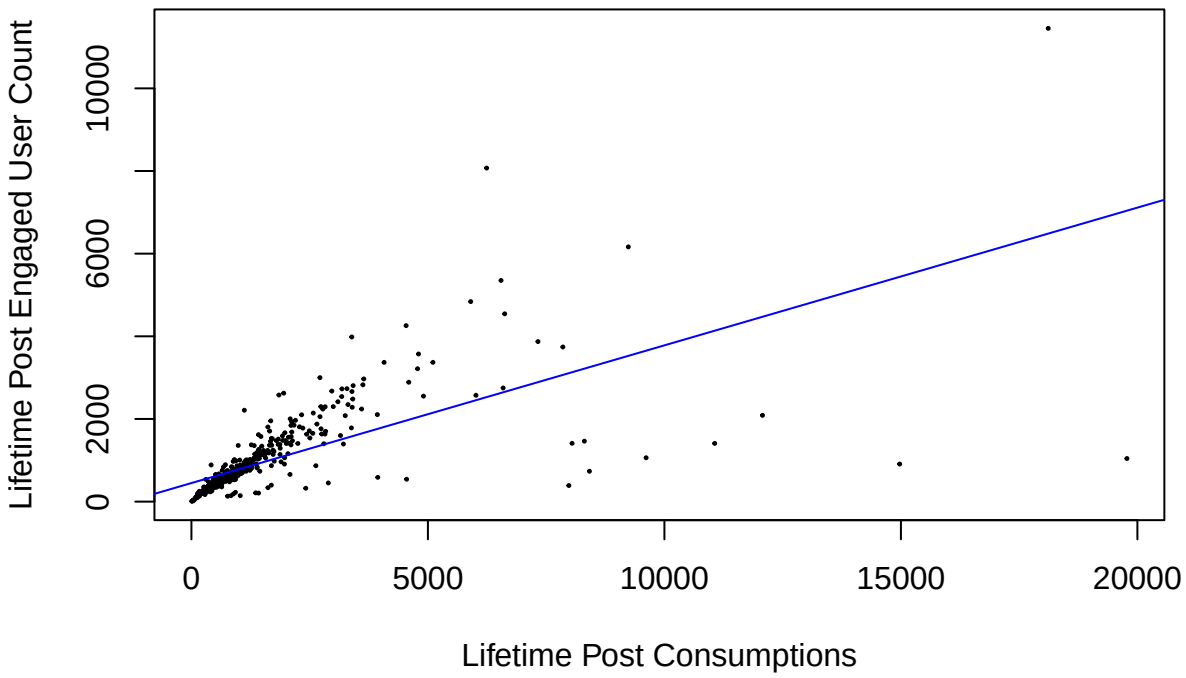
- High correlation between Lifetime.Post.Consumptions and Lifetime.Engaged.Users
- Lifetime.Post.Consumptions: The number of clicks anywhere in a post.
- Lifetime.Engaged.Users: The number of people who clicked anywhere in a post (unique users).

Find Outliers

- not required so far for deliverable 2

Scatterplot

```
plot(fc_data$Lifetime.Post.Consumptions,fc_data$Lifetime.Engaged.Users,
     xlab="Lifetime Post Consumptions",
     ylab="Lifetime Post Engaged User Count",
     pch=19, cex=0.2)+
abline(lsfit(x=fc_data$Lifetime.Post.Consumptions,y=fc_data$Lifetime.Engaged.Users), col="blue")
```


Lifetime Post Engaged User Count
0
2000
6000
10000
0
5000
10000
15000
20000
Lifetime Post Consumptions

```
## integer(0)
```