WEEK 12 IP

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1. Defining the Question

In this week's project I'll be working as a Data Science Consultant to a Kenyan entrepreneur who has created an online cryptography course and would want to advertise it on her blog. She currently targets audiences originating from various countries. In the past, she ran ads to advertise a related course on the same blog and collected data in the process. She would now like to employ my services as a Data Science Consultant to help her identify which individuals are most likely to click on her ads.

2. Defining the Metric for Success

Our metrics for success would be identifying the individuals who are most likely to click on the adds by identifying their gender, age, country and city.

3. Understanding the context

Every mainstream media website, news site, top blog, YouTube, and social media site uses advertising, and it's because advertising is a proven moneymaker. If you're a blogger with an audience that companies want to reach, you have the potential to make money by selling ads. Therefore, it's important that you know what type of advertising is going to sell best to your specific audience. As such, learning stats about your audience can help you to learn the basic demographics of your audience. The more you know about your audience, the better you'll be able to sell advertising to them.

4. Recording the Experimental Design

The following are the steps taken to implement the solution :

Define the question, the metric for success, the context, experimental design taken. Read and explore the given dataset. Define the appropriateness of the available data to answer the given question. Find and deal with outliers, anomalies, and missing data within the dataset. Perform Univariate and Bivariate Analysis recording our observations. Provide a conclusion and recommendation from the analysis.

5. Data Relevance

Our data is very relevant to our research question. As had mentioned earlier, the more you know about your audience, the better you'll be able to sell advertising to them. The dataset provided has very relevant information about the blog's audience.

6. Reading the Data

```
# Importing libraries
#install.packages("moments",repos="http://cran.us.r-project.org")
library(moments)
library(ggcorrplot)
```

```
## Loading required package: ggplot2
```

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------------------------- tidyverse 1.3.0 --

## v tibble  3.0.3     v dplyr   1.0.2
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.5.0
## v purrr   0.3.4

## -- Conflicts ------------------------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
#Loading the Dataset
advertising_dataset <- read.csv(url("http://bit.ly/IPAdvertisingData"))
```

6. Checking the Data

a.) Previewing the Data

```
#Previewing the top of our dataset
head(advertising_dataset)
```

```
##   Daily.Time.Spent.on.Site Age Area.Income Daily.Internet.Usage
## 1                    68.95  35    61833.90               256.09
## 2                    80.23  31    68441.85               193.77
## 3                    69.47  26    59785.94               236.50
## 4                    74.15  29    54806.18               245.89
## 5                    68.37  35    73889.99               225.58
## 6                    59.99  23    59761.56               226.74
##                          Ad.Topic.Line           City Male    Country
## 1    Cloned 5thgeneration orchestration    Wrightburgh    0    Tunisia
## 2    Monitored national standardization      West Jodi    1      Nauru
## 3      Organic bottom-line service-desk       Davidton    0 San Marino
## 4 Triple-buffered reciprocal time-frame West Terrifurt    1      Italy
## 5         Robust logistical utilization   South Manuel    0    Iceland
## 6       Sharable client-driven software      Jamieberg    1     Norway
##             Timestamp Clicked.on.Ad
## 1 2016-03-27 00:53:11             0
```

```
## 2 2016-04-04 01:39:02             0
## 3 2016-03-13 20:35:42             0
## 4 2016-01-10 02:31:19             0
## 5 2016-06-03 03:36:18             0
## 6 2016-05-19 14:30:17             0
```

```
#Previewing the bottom of the dataset
tail(advertising_dataset)
```

```
##      Daily.Time.Spent.on.Site Age Area.Income Daily.Internet.Usage
## 995                     43.70  28    63126.96               173.01
## 996                     72.97  30    71384.57               208.58
## 997                     51.30  45    67782.17               134.42
## 998                     51.63  51    42415.72               120.37
## 999                     55.55  19    41920.79               187.95
## 1000                    45.01  26    29875.80               178.35
##                            Ad.Topic.Line          City Male
## 995         Front-line bifurcated ability  Nicholasland    0
## 996         Fundamental modular algorithm     Duffystad    1
## 997       Grass-roots cohesive monitoring   New Darlene    1
## 998          Expanded intangible solution South Jessica    1
## 999  Proactive bandwidth-monitored policy   West Steven    0
## 1000      Virtual 5thgeneration emulation   Ronniemouth    0
##                      Country           Timestamp Clicked.on.Ad
## 995                  Mayotte 2016-04-04 03:57:48             1
## 996                  Lebanon 2016-02-11 21:49:00             1
## 997  Bosnia and Herzegovina 2016-04-22 02:07:01             1
## 998                 Mongolia 2016-02-01 17:24:57             1
## 999                Guatemala 2016-03-24 02:35:54             0
## 1000                  Brazil 2016-06-03 21:43:21             1
```

```
# Checking the names of the columns
names(advertising_dataset)
```

```
##  [1] "Daily.Time.Spent.on.Site" "Age"
##  [3] "Area.Income"              "Daily.Internet.Usage"
##  [5] "Ad.Topic.Line"            "City"
##  [7] "Male"                     "Country"
##  [9] "Timestamp"                "Clicked.on.Ad"
```

```
#Displaying the structure of our dataset
str(advertising_dataset)
```

```
## 'data.frame':    1000 obs. of  10 variables:
##  $ Daily.Time.Spent.on.Site: num  69 80.2 69.5 74.2 68.4 ...
##  $ Age                     : int  35 31 26 29 35 23 33 48 30 20 ...
##  $ Area.Income             : num  61834 68442 59786 54806 73890 ...
##  $ Daily.Internet.Usage    : num  256 194 236 246 226 ...
##  $ Ad.Topic.Line           : chr  "Cloned 5thgeneration orchestration" "Monitored national standardi
##  $ City                    : chr  "Wrightburgh" "West Jodi" "Davidton" "West Terrifurt" ...
##  $ Male                    : int  0 1 0 1 0 1 0 1 1 1 ...
##  $ Country                 : chr  "Tunisia" "Nauru" "San Marino" "Italy" ...
##  $ Timestamp               : chr  "2016-03-27 00:53:11" "2016-04-04 01:39:02" "2016-03-13 20:35:42"
##  $ Clicked.on.Ad           : int  0 0 0 0 0 0 0 1 0 0 ...
```

```r
#Checking the dimension of our dataset
dim(advertising_dataset)
```

```
## [1] 1000   10
```

```r
#Checking the class of our data set using the class() function
class(advertising_dataset)
```

```
## [1] "data.frame"
```

```r
# Checking the datatypes for each column
columns = colnames(advertising_dataset)
for (column in seq(length(colnames(advertising_dataset)))){
    print(columns[column])
    print(class(advertising_dataset[, column]))
    cat('\n')
}
```

```
## [1] "Daily.Time.Spent.on.Site"
## [1] "numeric"
##
## [1] "Age"
## [1] "integer"
##
## [1] "Area.Income"
## [1] "numeric"
##
## [1] "Daily.Internet.Usage"
## [1] "numeric"
##
## [1] "Ad.Topic.Line"
## [1] "character"
##
## [1] "City"
## [1] "character"
##
## [1] "Male"
## [1] "integer"
##
## [1] "Country"
## [1] "character"
##
## [1] "Timestamp"
## [1] "character"
##
## [1] "Clicked.on.Ad"
## [1] "integer"
```

Our data frame has 1000 entries and 10 columns. The columns in our dataset are numerical, character and integer. However, the gender and clicked on Ad column are classified as integer data types but they are categorical columns.

b.) Null Values

```
#Checking the number of missing data in our dataset
sum(is.na(advertising_dataset))
```

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

c.) Duplicates

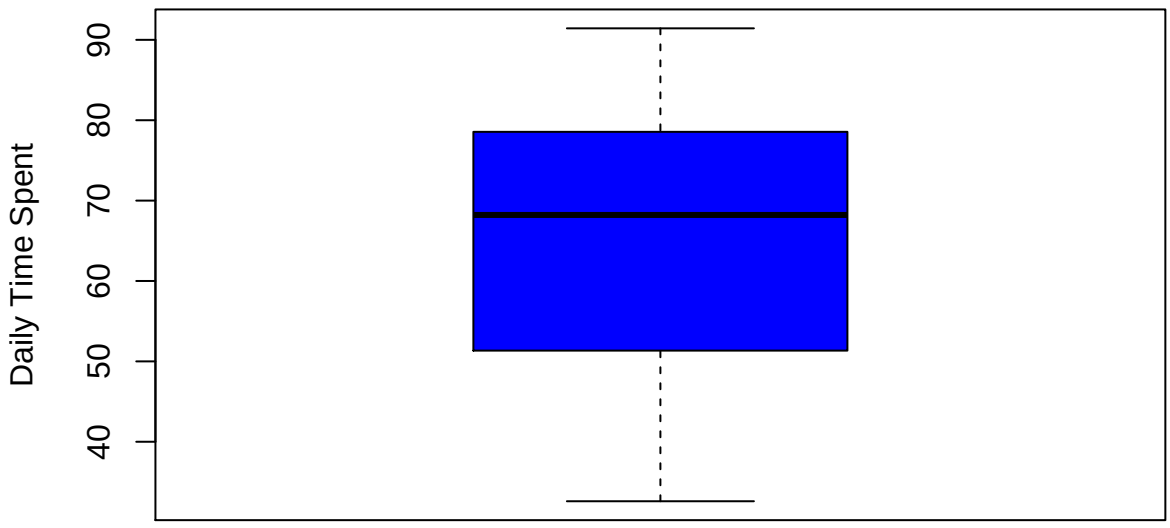
```
#Checking for duplicated data
duplicated <- advertising_dataset[duplicated(advertising_dataset),]
duplicated
```

```
##  [1] Daily.Time.Spent.on.Site Age                      Area.Income
##  [4] Daily.Internet.Usage     Ad.Topic.Line            City
##  [7] Male                     Country                  Timestamp
## [10] Clicked.on.Ad
## <0 rows> (or 0-length row.names)
```

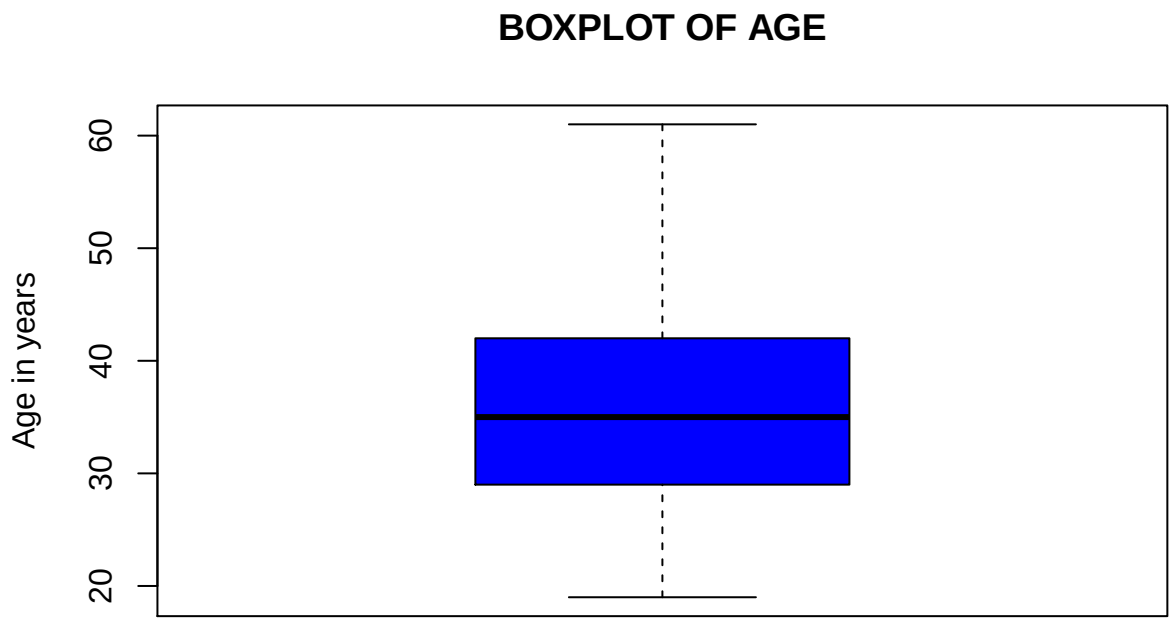
Our data frame has no null values and no dulpicated entries.

d.) Outliers

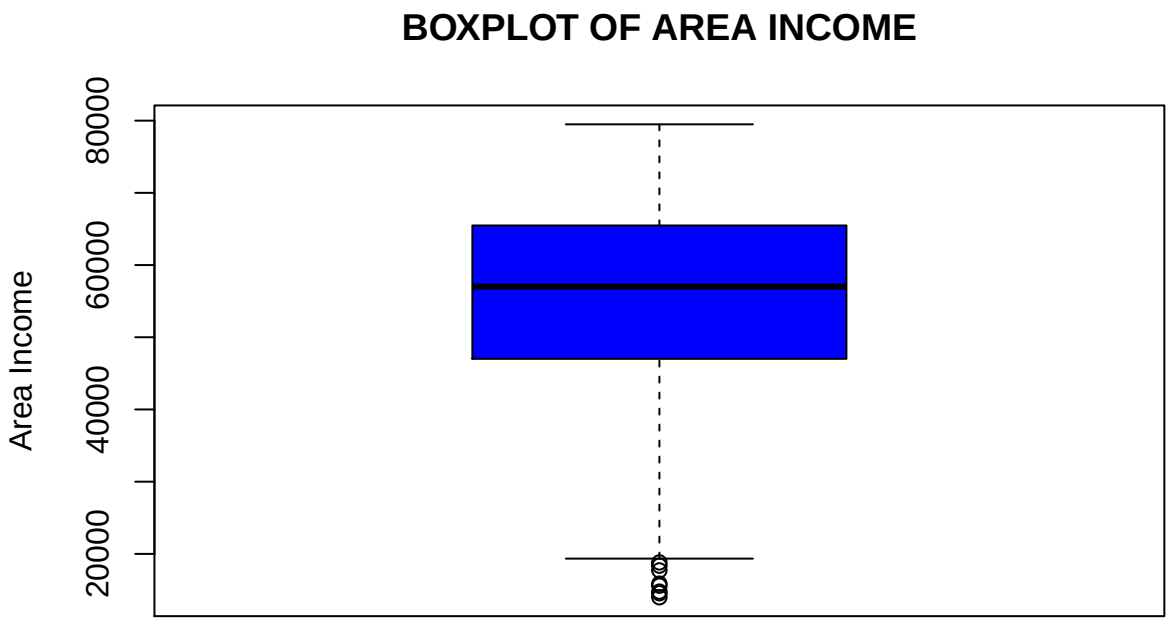
```
# Checking for outliers on the numeric columns

#Checking for outliers in the Daily Time Spent on Site column
boxplot(advertising_dataset$Daily.Time.Spent.on.Site,
        main = toupper("Boxplot of Daily Time Spent on Site"),
        ylab = "Daily Time Spent",
        col = "blue")
```



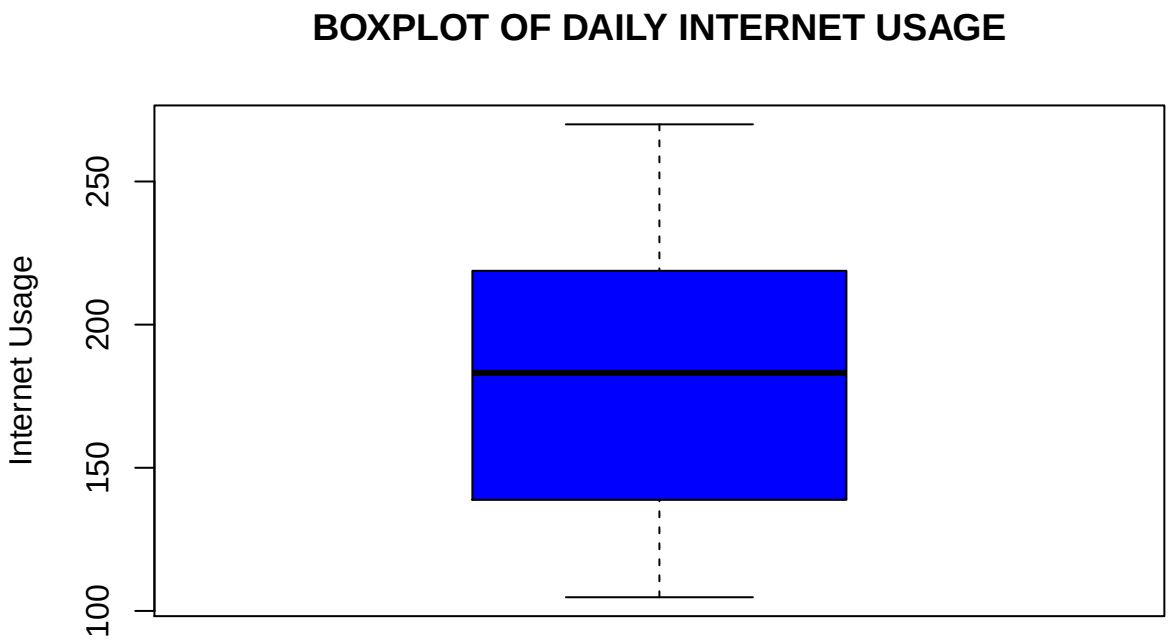

```
#Checking for outliers in the Age column
boxplot(advertising_dataset$Age,
        main = toupper("Boxplot of Age"),
        ylab = "Age in years",
        col = "blue")
```




```r
#Checking for outliers in the Area Income column
boxplot(advertising_dataset$Area.Income,
        main = toupper("Boxplot of Area Income"),
        ylab = "Area Income",
        col = "blue")
```




```r
#Checking for outliers in the Daily Internet Usage column
boxplot(advertising_dataset$Daily.Internet.Usage,
        main = toupper("Boxplot of Daily Internet Usage"),
        ylab = "Internet Usage",
        col = "blue")
```



We only have outliers in the Area Income column. However we'll not remove these outliers as they are actual information about the individuals who viwe the blog.

7. Tidying the Dataset

```
#Changing the  name of the Male column to Gender
colnames(advertising_dataset)[colnames(advertising_dataset) == 'Male'] = 'Gender'
colnames(advertising_dataset)
```

```
##  [1] "Daily.Time.Spent.on.Site" "Age"
##  [3] "Area.Income"              "Daily.Internet.Usage"
##  [5] "Ad.Topic.Line"            "City"
##  [7] "Gender"                   "Country"
##  [9] "Timestamp"                "Clicked.on.Ad"
```

```
#Changing the data type for gender and clicked on ad from integer to factor
cols <- c('Gender' ,'Clicked.on.Ad')
advertising_dataset[,cols] <- lapply(advertising_dataset[,cols] , factor)
```

```
# Checking the datatypes for each column to see if the data type for Gender and Clicked on Ad changed t
columns = colnames(advertising_dataset)
for (column in seq(length(colnames(advertising_dataset)))){
    print(columns[column])
    print(class(advertising_dataset[, column]))
```

```
    cat('\n')
}
```

```
## [1] "Daily.Time.Spent.on.Site"
## [1] "numeric"
##
## [1] "Age"
## [1] "integer"
##
## [1] "Area.Income"
## [1] "numeric"
##
## [1] "Daily.Internet.Usage"
## [1] "numeric"
##
## [1] "Ad.Topic.Line"
## [1] "character"
##
## [1] "City"
## [1] "character"
##
## [1] "Gender"
## [1] "factor"
##
## [1] "Country"
## [1] "character"
##
## [1] "Timestamp"
## [1] "character"
##
## [1] "Clicked.on.Ad"
## [1] "factor"
```

Our categorical columns i.e. gender and clicked on ad are now fcator data types and not integers anymore.

8. Exploratory Analysis

a.) Univariate Analysis

```
# Summary statistics of the scaled data
(summary(advertising_dataset))
```

i.) Measures of Central Tendency

```
##  Daily.Time.Spent.on.Site      Age          Area.Income    Daily.Internet.Usage
##  Min.   :32.60            Min.   :19.00   Min.   :13996   Min.   :104.8
##  1st Qu.:51.36            1st Qu.:29.00   1st Qu.:47032   1st Qu.:138.8
##  Median :68.22            Median :35.00   Median :57012   Median :183.1
##  Mean   :65.00            Mean   :36.01   Mean   :55000   Mean   :180.0
```

```
##  3rd Qu.:78.55            3rd Qu.:42.00   3rd Qu.:65471   3rd Qu.:218.8
##  Max.   :91.43            Max.   :61.00   Max.   :79485   Max.   :270.0
##  Ad.Topic.Line          City           Gender    Country
##  Length:1000        Length:1000        0:519   Length:1000
##  Class :character   Class :character   1:481   Class :character
##  Mode  :character   Mode  :character           Mode  :character
##
##
##
##   Timestamp         Clicked.on.Ad
##  Length:1000        0:500
##  Class :character   1:500
##  Mode  :character
##
##
##
```

The above output gives us the minimum, maximum, median. mean, 1st and 3rd quantile of each of our numerical columns.

```
#Getting the mode
#Creating a function to calculate the mode
getmode <- function(v){
  uniqv <- unique(v)
  uniqv[which.max(tabulate(match(v,uniqv)))]
}
#Getting the mode of each continous variable
getmode(advertising_dataset$Daily.Time.Spent.on.Site)
```

```
## [1] 62.26
```

```
getmode(advertising_dataset$Age)
```

```
## [1] 31
```

```
getmode(advertising_dataset$Area.Income)
```

```
## [1] 61833.9
```

```
getmode(advertising_dataset$Daily.Internet.Usage)
```

```
## [1] 167.22
```

The above output is the mode of each numerical column.

Most individuals in our data frame spend 62.26 minutes on the site, they are aged 31, they have an area income of $61,833.9 and their daily internet usage is 167.22

```r
#Finding the Range of numerical variables
range(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE)
```

ii.) Measures of Dispersion

```
## [1] 32.60 91.43
```

```r
max(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE) - min(advertising_dataset$Daily.Time.Spent
```

```
## [1] 58.83
```

```r
range(advertising_dataset$Age, na.rm=TRUE)
```

```
## [1] 19 61
```

```r
max(advertising_dataset$Age, na.rm=TRUE) - min(advertising_dataset$Age, na.rm=TRUE)
```

```
## [1] 42
```

```r
range(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
## [1] 13996.5 79484.8
```

```r
max(advertising_dataset$Area.Income, na.rm=TRUE) - min(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
## [1] 65488.3
```

```r
range(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE)
```

```
## [1] 104.78 269.96
```

```r
max(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE) - min(advertising_dataset$Daily.Internet.Usage
```

```
## [1] 165.18
```

The range of each numerical value is as listed below:

Daily Time Spent on Site is 58.83 minutes with a maximum of 91.43 minutes and 32.60 minutes

Age is 41 years with the maximum being 61 years and minimum being 19 years.

Area Income is 65,488.3 with a maximum of 79,484.8 and minimum of 13,996.5.

Daily Internet usage is 165.18 with a maximum of 269.96 and minimum of 104.78.

```r
#Finding the Interquartile Range
quantile(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE)
```

```
##      0%     25%     50%     75%    100%
## 32.6000 51.3600 68.2150 78.5475 91.4300
```

```r
quantile(advertising_dataset$Age, na.rm=TRUE)
```

```
##   0%  25%  50%  75% 100%
##   19   29   35   42   61
```

```r
quantile(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
##       0%      25%      50%      75%     100%
## 13996.50 47031.80 57012.30 65470.64 79484.80
```

```r
quantile(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE)
```

```
##       0%      25%      50%      75%     100%
## 104.7800 138.8300 183.1300 218.7925 269.9600
```

The above output gives the quantiles of each of the numeric columns.

```r
#Finding the Standard Deviation
sd(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE)
```

```
## [1] 15.85361
```

```r
sd(advertising_dataset$Age, na.rm=TRUE)
```

```
## [1] 8.785562
```

```r
sd(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
## [1] 13414.63
```

```r
sd(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE)
```

```
## [1] 43.90234
```

```r
#Finding the Variance
var(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE)
```

```
## [1] 251.3371
```

```r
var(advertising_dataset$Age, na.rm=TRUE)
```

```
## [1] 77.18611
```

```r
var(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
## [1] 179952406
```

```r
var(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE)
```

```
## [1] 1927.415
```

```r
#Finding the Skewness
skewness(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE)
```

```
## [1] -0.3712026
```

```r
skewness(advertising_dataset$Age, na.rm=TRUE)
```

```
## [1] 0.4784227
```

```r
skewness(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
## [1] -0.6493967
```

```r
skewness(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE)
```

```
## [1] -0.03348703
```

```r
#Finding the Kurtosis
kurtosis(advertising_dataset$Daily.Time.Spent.on.Site, na.rm=TRUE)
```

```
## [1] 1.903942
```

```r
kurtosis(advertising_dataset$Age, na.rm=TRUE)
```

```
## [1] 2.595482
```

```r
kurtosis(advertising_dataset$Area.Income, na.rm=TRUE)
```

```
## [1] 2.894694
```

```r
kurtosis(advertising_dataset$Daily.Internet.Usage, na.rm=TRUE)
```

```
## [1] 1.727701
```

The standard deviation, variance, skewness and kurtosis of each numeric variable is as listed in the above outputs.

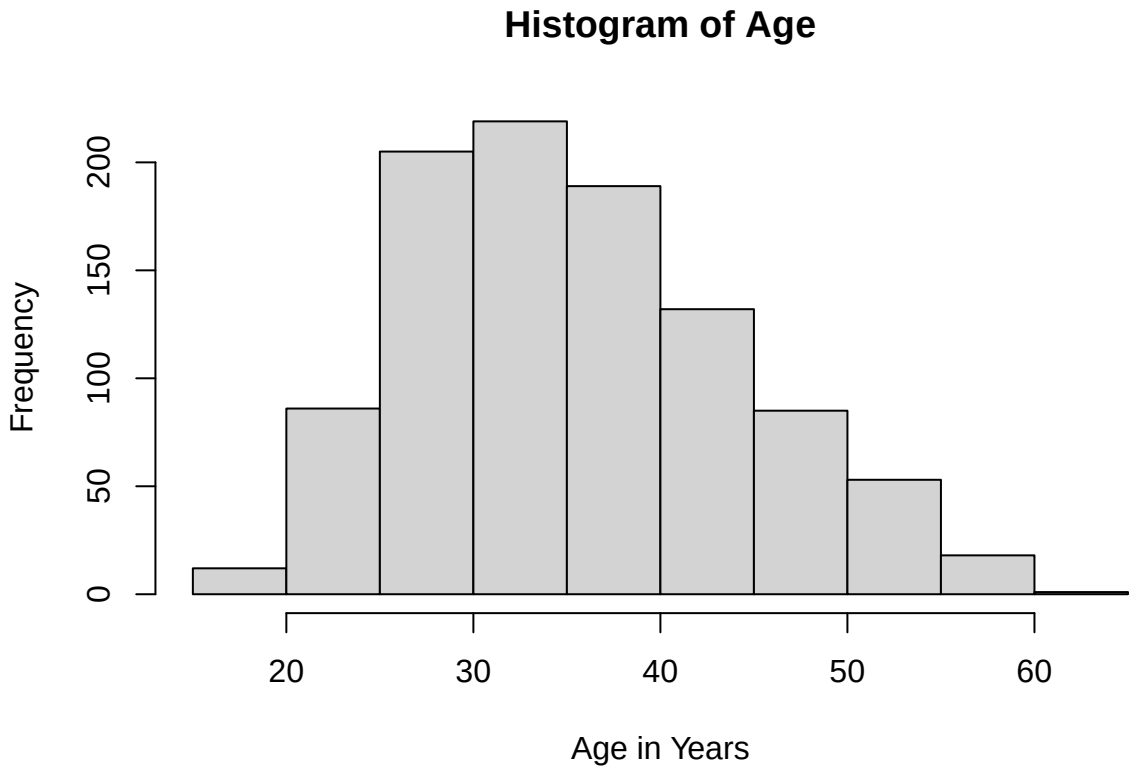
Only Age is positively skewed implying the mean age is greater than the mode. The other variables are negatively skewed.

The kurtosis of each of the numeric variable is greater than zero. This implies that ouur dataframe has outliers as we had seen in the boxplots plotted. The area income has high kurtosis and as we had seen, it had outliers present.

iii.) Histograms

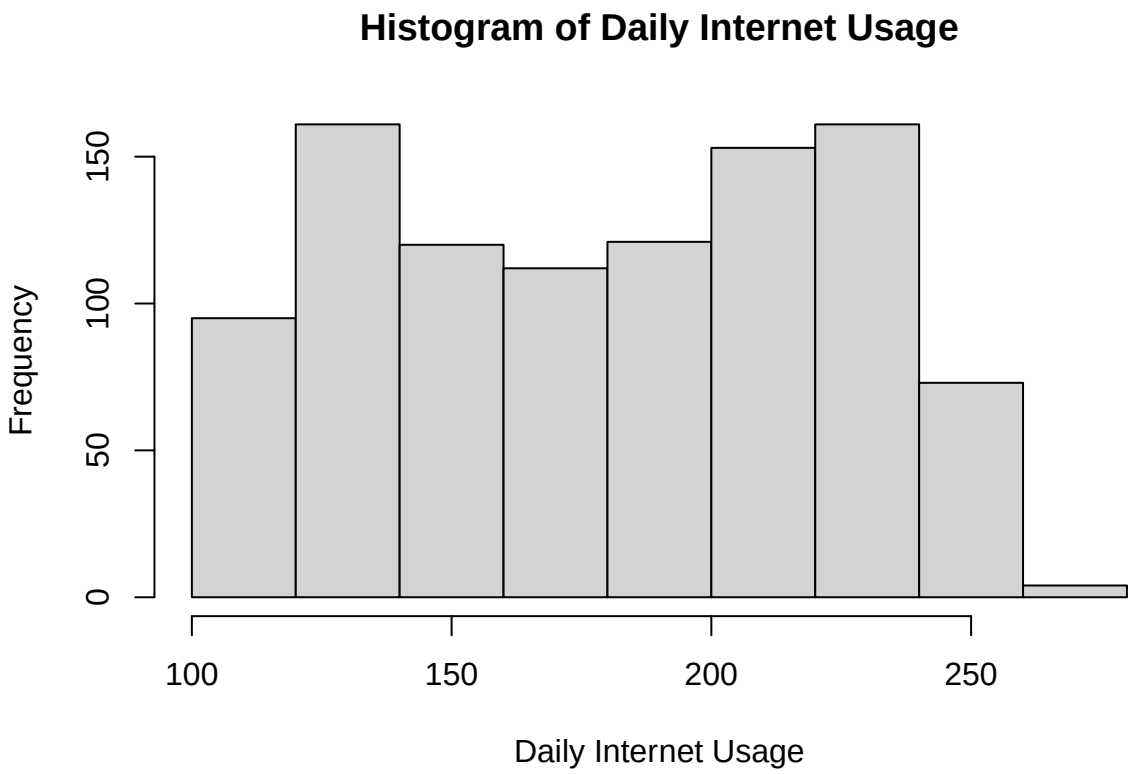
We'll plot histograms of each of the numerical data types to see their distribution.

```
#Plotting a histogram for age
hist(advertising_dataset$Age,
     main = "Histogram of Age",
     xlab = "Age in Years")
```



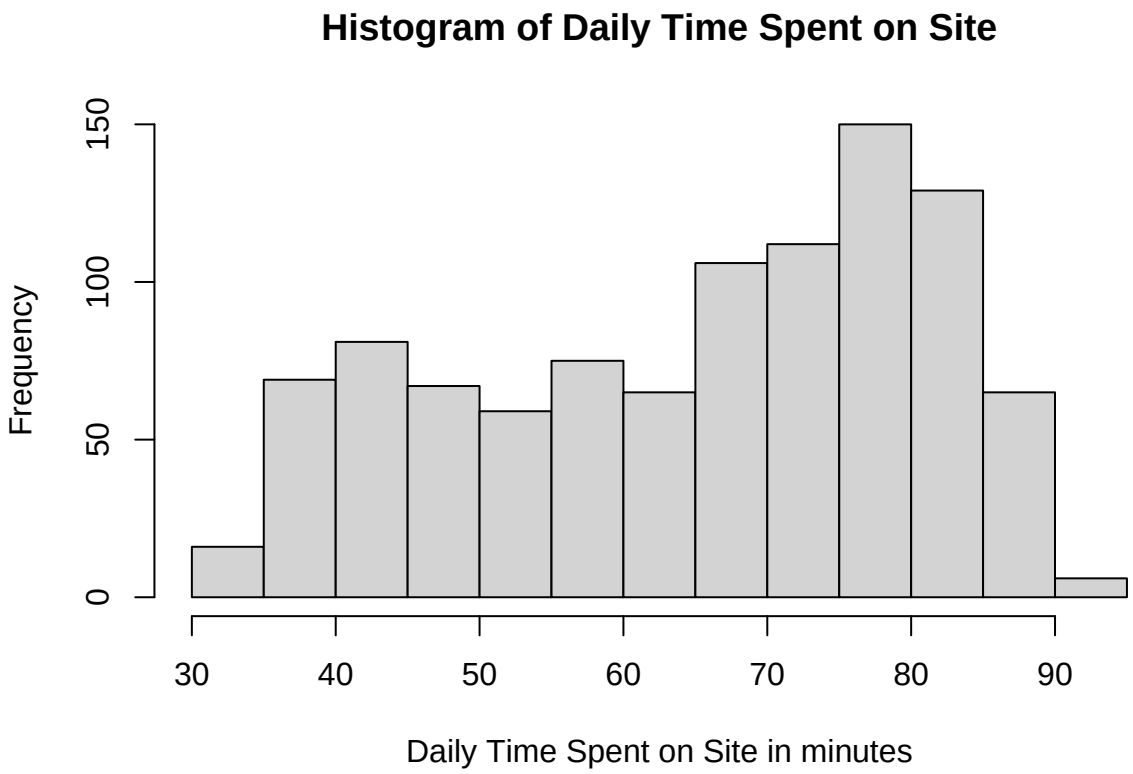
Many of the individuals in our data frame are between the ages of 25 and 40. This shows that majority of the audience of the blog is between this age bracket with very few being below 25 years and above 50 years old.

```
#Plotting a histogram for Daily Internet Usage
hist(advertising_dataset$Daily.Internet.Usage,
     main = "Histogram of Daily Internet Usage",
     xlab = "Daily Internet Usage")
```



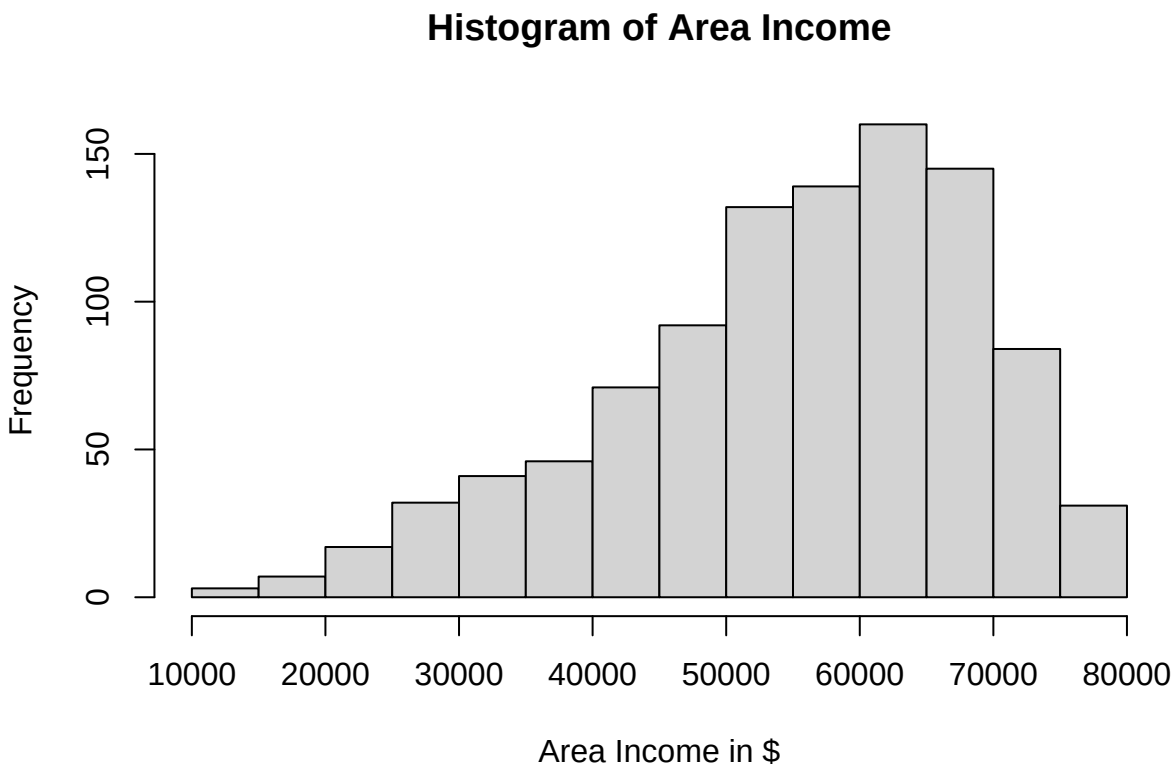
Majority of the audience's Daily Internet usage is between 100-140 and 200-240.

```
#Plotting a histogram for Daily Time Spent on Site
hist(advertising_dataset$Daily.Time.Spent.on.Site,
     main = "Histogram of Daily Time Spent on Site",
     xlab = "Daily Time Spent on Site in minutes")
```



Majority of the audience spend 75-80 minutes daily on the site with very few people spending less than 40 minutes and more than 85 minutes on the site.

```
#Plotting a histogram for Area Income
hist(advertising_dataset$Area.Income,
     main = "Histogram of Area Income",
     xlab = "Area Income in $")
```



The area income for majority of the audience in our data frame have a relatively high area income of 60,500 with very few having a lower income of between 10,000 and 40,000.

b.) Bivariate Analysis

```
daily_time <- advertising_dataset$Daily.Time.Spent.on.Site
age <- advertising_dataset$Age
area <- advertising_dataset$Area.Income
daily_usage <- advertising_dataset$Daily.Internet.Usage
cov(daily_time, age)
```

i.) Covariance

```
## [1] -46.17415
```

```
cov(daily_time, area)
```

```
## [1] 66130.81
```

```
cov(daily_time, daily_usage)
```

```
## [1] 360.9919
```

```
cov(age, area)
```

```
## [1] -21520.93
```

```
cov(age, daily_usage)
```

```
## [1] -141.6348
```

```
cov(area, daily_usage)
```

```
## [1] 198762.5
```

From the above, we can tell that Daily time spent on site and Age, Age and Area Income, Age and Daily Internet Usage have a negative linear relationship with each other. On the other hand, Daily time spent on site and area, Daily time spent on site and Daily Internet Usage and Area Income and Daily Internet Usage have a positive linear relationship with each other.

ii.) Correlation The correlation of each numeric variable will help in understanding the association of these random variables.

```
correlation <- round(cor(select_if(advertising_dataset, is.numeric)), 2)
head(correlation)
```

```
##                           Daily.Time.Spent.on.Site   Age Area.Income
## Daily.Time.Spent.on.Site                     1.00 -0.33        0.31
## Age                                         -0.33  1.00       -0.18
## Area.Income                                  0.31 -0.18        1.00
## Daily.Internet.Usage                         0.52 -0.37        0.34
##                           Daily.Internet.Usage
## Daily.Time.Spent.on.Site                 0.52
## Age                                     -0.37
## Area.Income                              0.34
## Daily.Internet.Usage                     1.00
```

The above output gives us the correlation of each variable. We can deduce that:

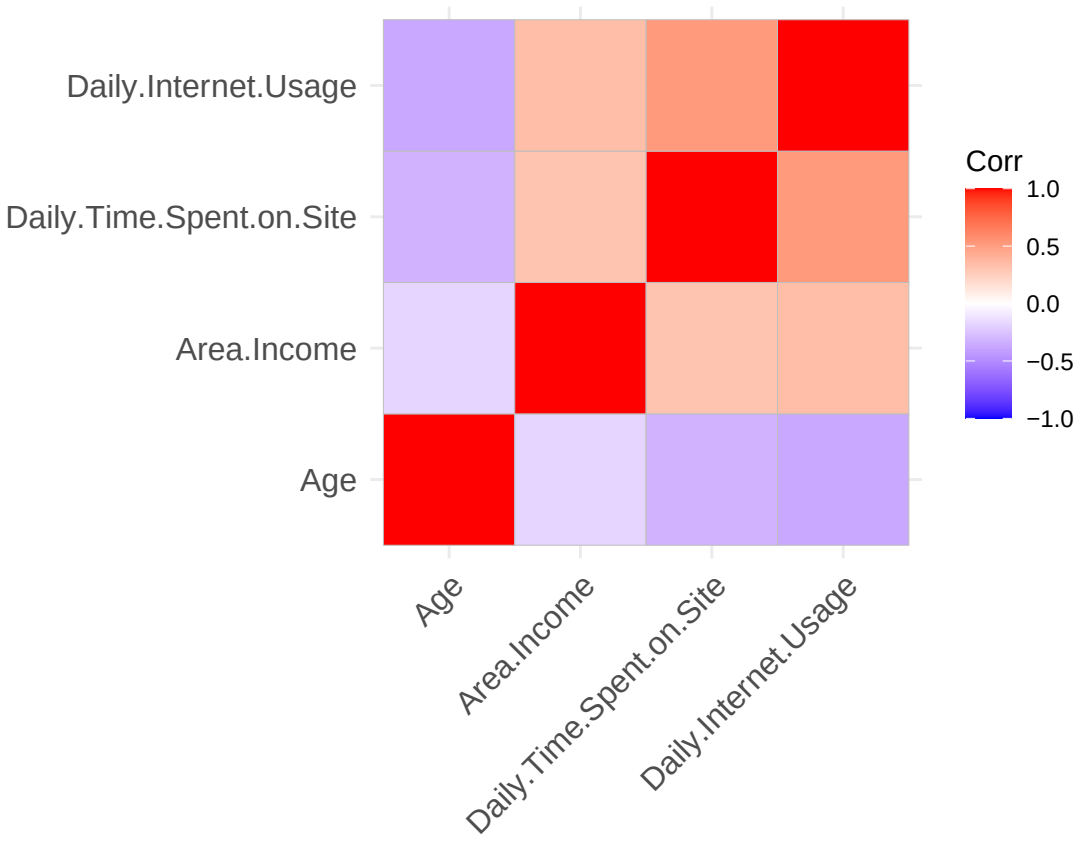
The daily time spent on site is positively linearly related to Area Income and Daily Internet Usage and negatively correlated to age.

Age is negatively linearly correlated to all other variables.

Area Income is positively correlated to Daily Time spent on site, as mentioned earlier, and Daily Internet Usage.

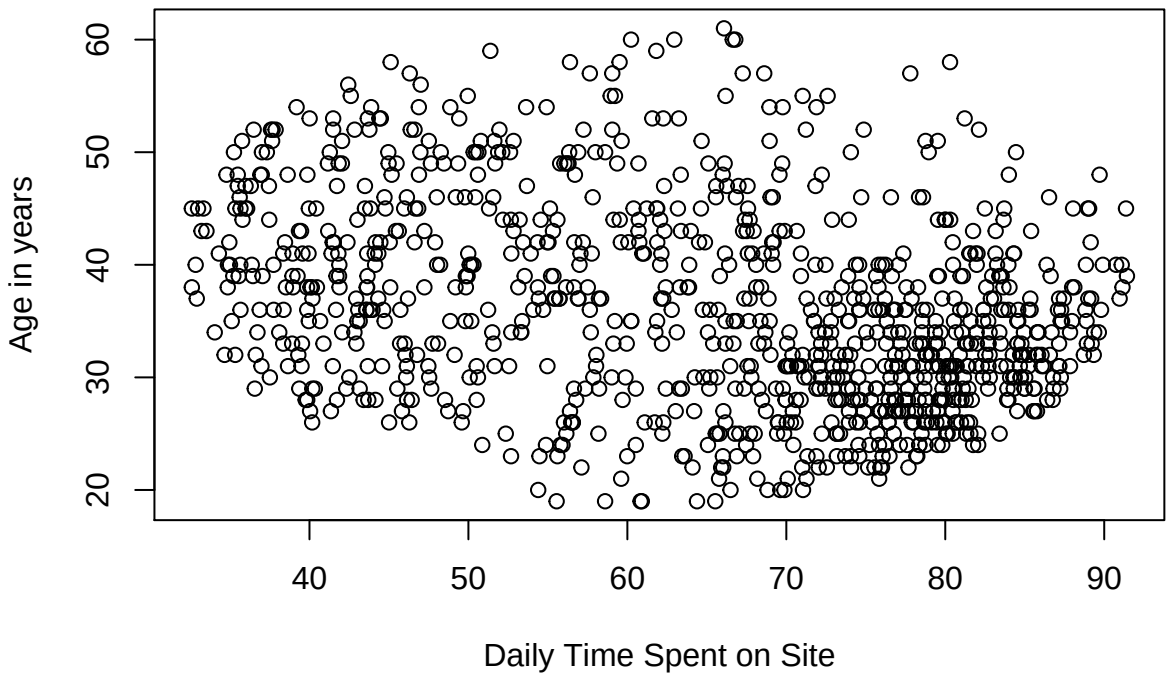
We'll plot a heatmap to visualize the correlation matrix of our numeric variables.

```
corr = round(cor(select_if(advertising_dataset, is.numeric)), 2)
ggcorrplot(corr, hc.order = T)
```



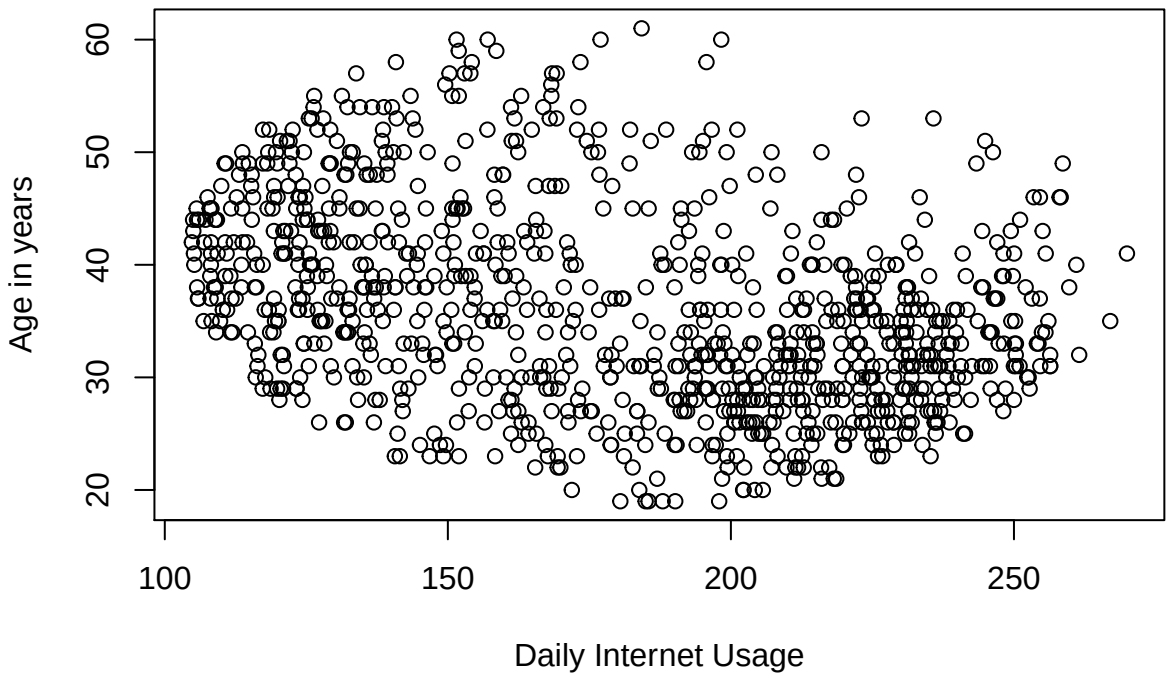
iii.) Scatter Plot We'll plot scatter plots of the numerical variables to understand how they are related.

```
# Plotting a scatter plot of Daily time spent on site and age
plot(daily_time, age, xlab="Daily Time Spent on Site", ylab="Age in years")
```



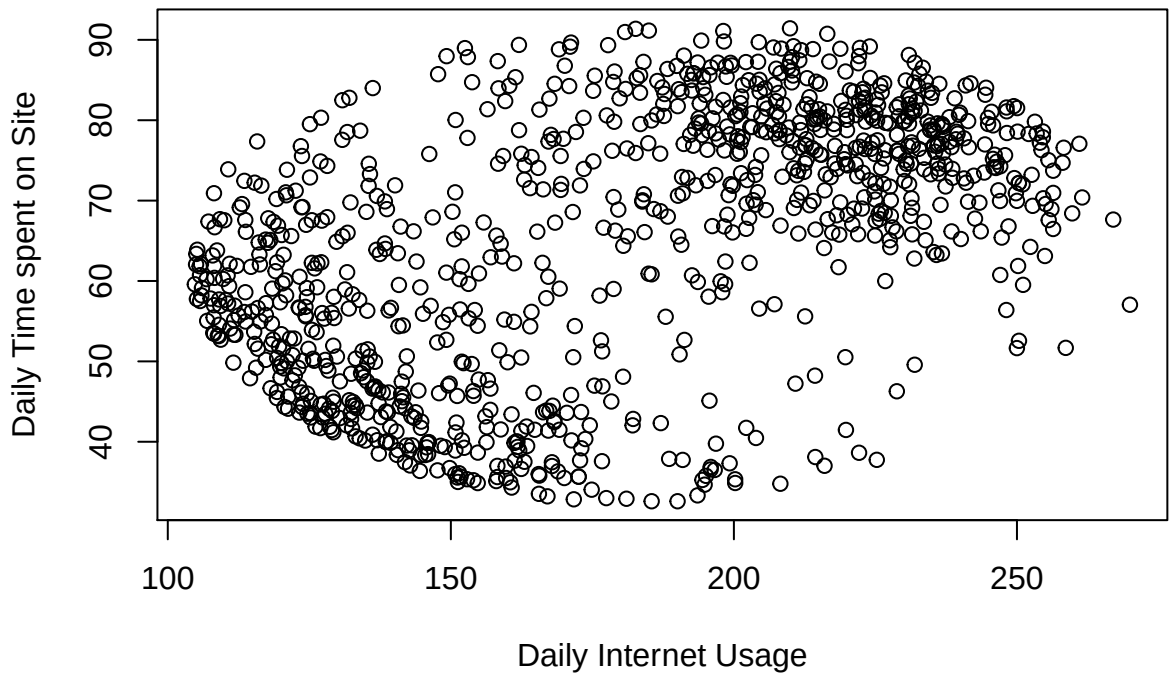
Younger people tend to spend more time on the site than older people as shown.

```
# Plotting a scatter plot of Daily Internet Usage and age
plot(daily_usage, age, xlab="Daily Internet Usage", ylab="Age in years")
```



Younger people seem to have a relatively higher Daily Internet Usage than Older people

```
# Plotting a scatter plot of Daily Internet usage and Daily time spent on site
plot(daily_usage, daily_time, xlab="Daily Internet Usage", ylab="Daily Time spent on Site")
```

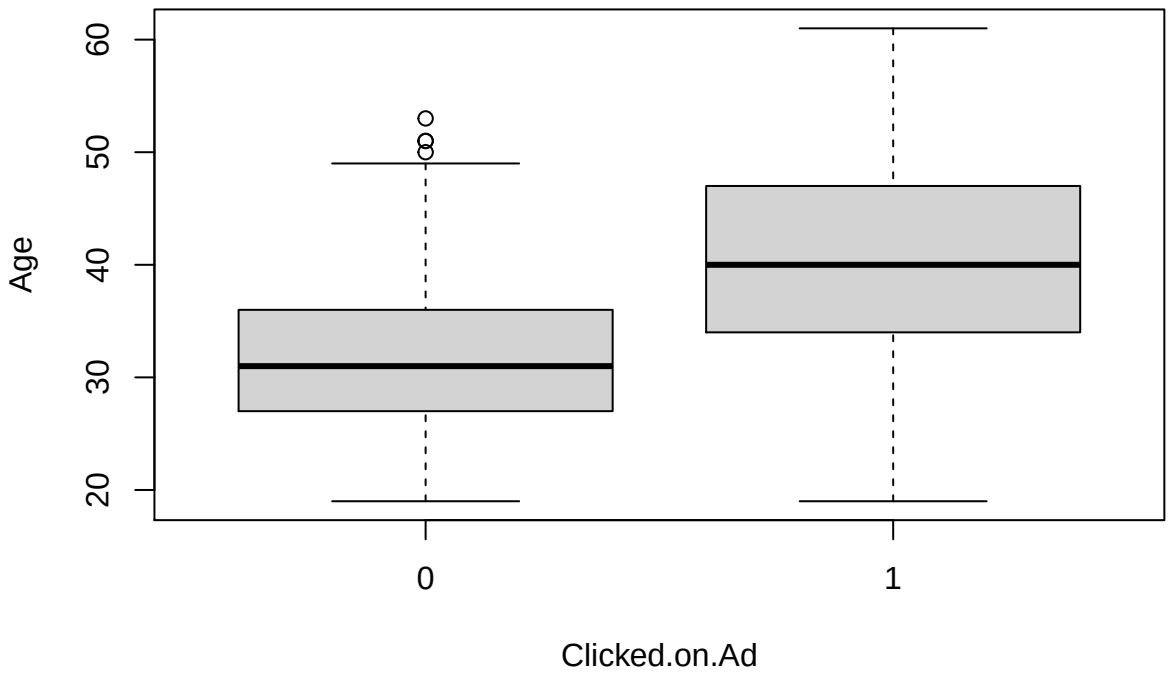


Majority of the individuals with a high Daily internet usage spend more time on the site while those with a low daily internet usage spend less time on the site.

iv.) Boxplots

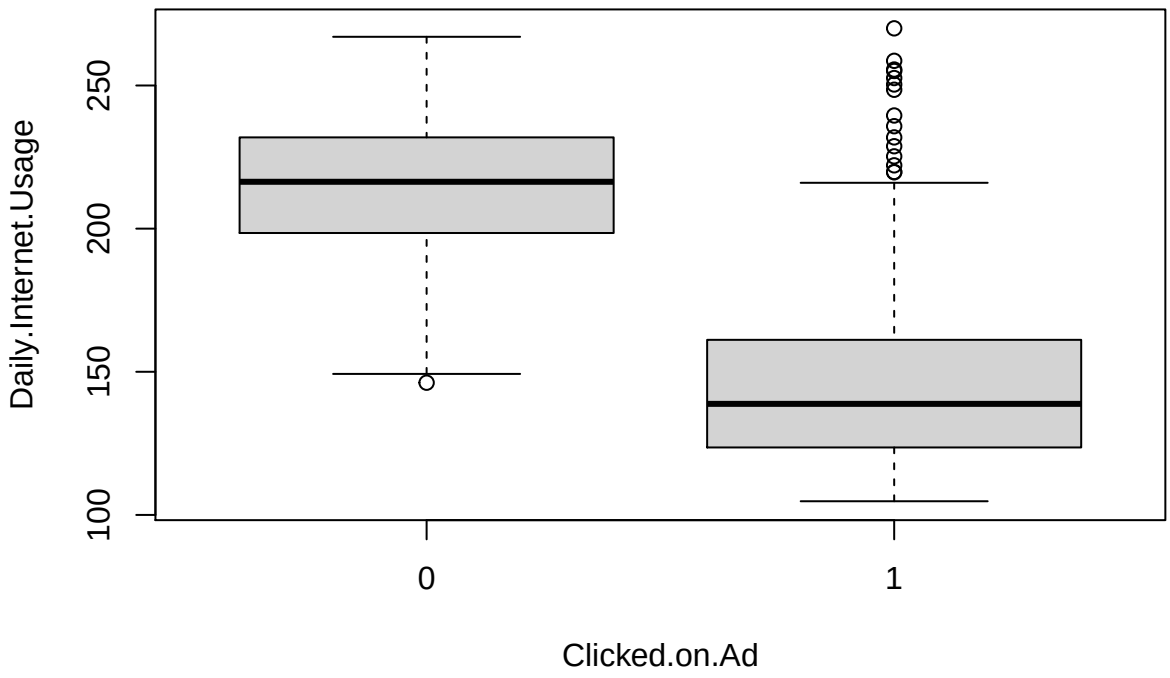
We'll plot boxplots to visualize Numerical and Factor data type

```
#Plotting boxplots for age and clicked on ad
plot(Age ~ Clicked.on.Ad , data = advertising_dataset)
```



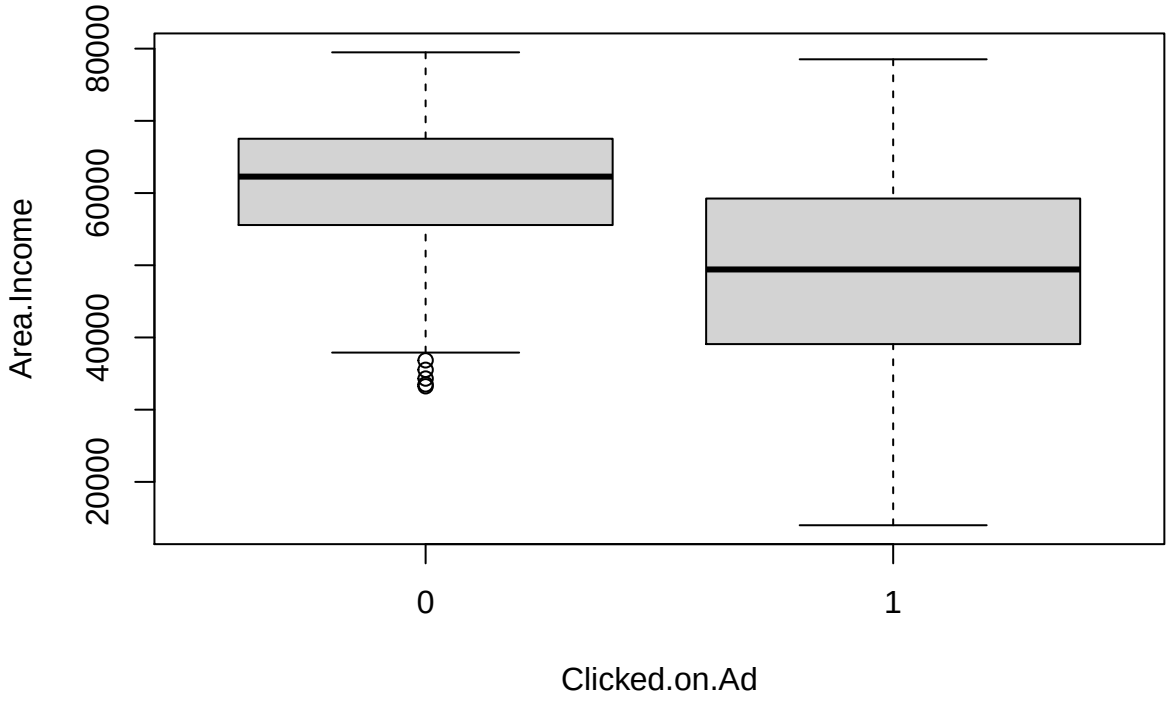
Individuals aged between 27 and 36 are the majority of the audience who did not click on the Ad while those who clicked on the ad were aged above 36. Therefore older people click on ads more than younger people do.

```
#Plotting boxplots for Daily Internet Usage and clicked on ad
plot(Daily.Internet.Usage ~ Clicked.on.Ad , data = advertising_dataset)
```



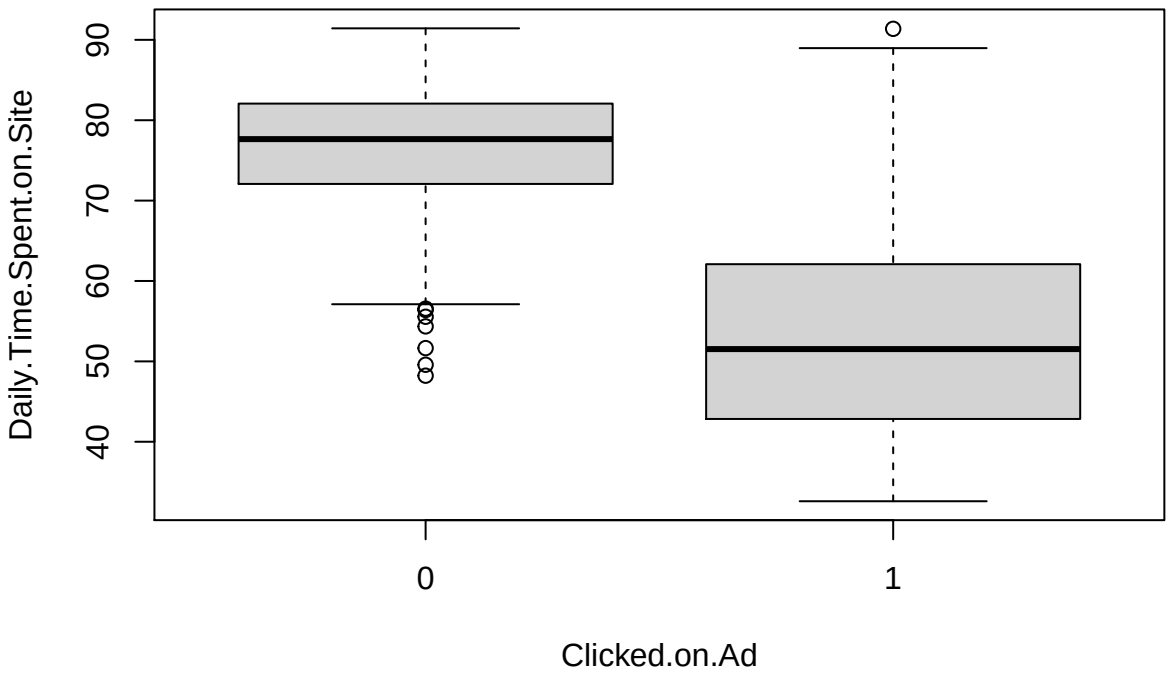
Individuals with a lower Daily Internet Usage clicked on the ad more than those with a higher internet usage.

```
#Plotting boxplots for Area Income and clicked on ad
plot(Area.Income ~ Clicked.on.Ad , data = advertising_dataset)
```



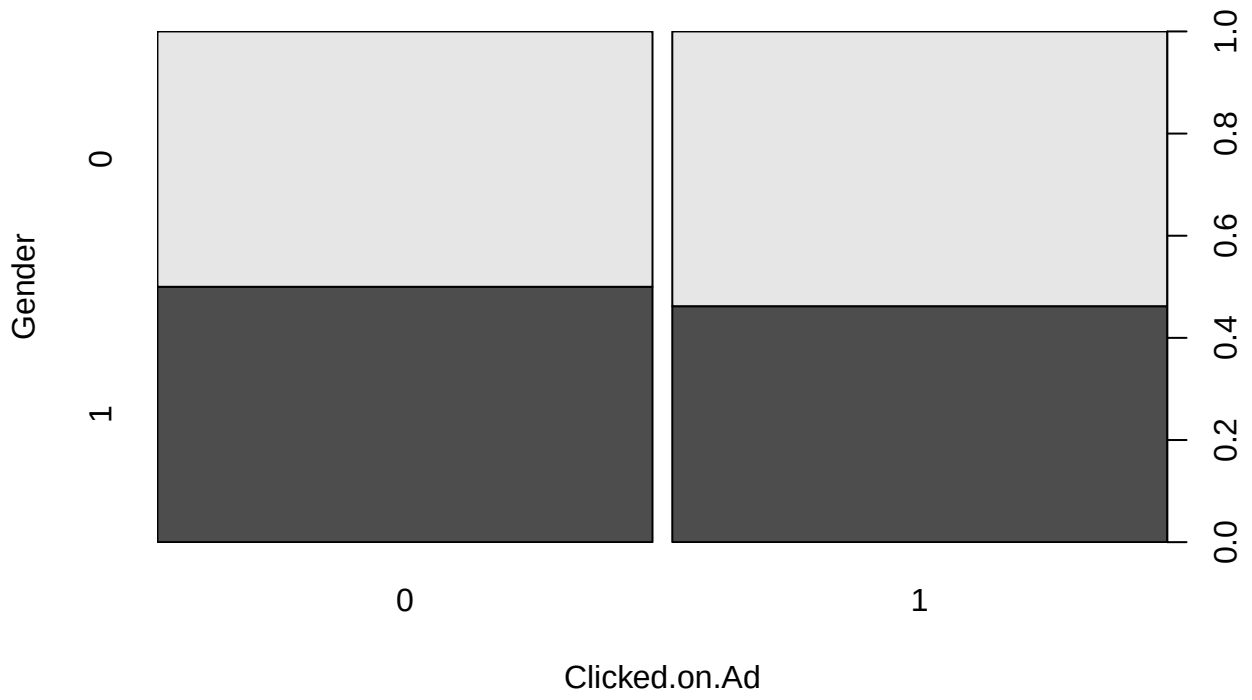
Individuals with a lower Area Income clicked on the Ad more than those who have a higher Area Income.

```
#Plotting boxplots for Daily Time Spent on Site and clicked on ad
plot(Daily.Time.Spent.on.Site ~ Clicked.on.Ad , data = advertising_dataset)
```



Individuals who spend less time on the site click on the ad more than those who spent more time on the site.

```
#Plotting boxplots for Gender and clicked on ad
plot(Gender ~ Clicked.on.Ad , data = advertising_dataset)
```



Females clicked on the ads more than the male gender did.

9. Challenging the Solution

The analysis could be perfected by visualizing how individuals from different countries and cities clicked on the ad. The timestamp variable was also not taken into consideration. This would have been great to understand what time is more popular for individuals to click on the ad.

10. Conclusions and Recommendations

From this analysis, we can conclude the following:

Majority of the audience of the blog are:

Aged between 25 and 40 years

Females

Spend 75-80 minutes on the blog

Have a high area income

Have a moderate Daily internet usage.

Majority of the individuals who clicked on the ad have the following attributes:

They are older i.e. ages above 36

They have a low daily internet usage

They have a lower area income

They spend less time on the site.

They are female.

Younger people(below 36), people with a high daily internet usage, high area income and spend more time on the site are least likely to click on the ad.

Based on this analysis I would recommend to the Kenyan entrepreneur to create ads that are more accommodating i.e. the ads should be able to influence all types of gender, both young and old people.