IP_week12

2022-07-15

Online cryptography course advertising

Specifying the Data Analytic Question

> As a Data Science Consultant, I have been employed by an online cryptography course entrepreneur to help her identify which individuals are most likely to click on her ads.

Defining the Metric for Success > Identifying which individuals are most likely to click on her ads

Understanding the context

> A Kenyan entrepreneur has created an online cryptography course and would want to advertise it on her blog. She currently targets audiences originating from various countries. She would like to identify which individuals are most likely to click on her ads.

Recording the Experimental Design > * Reading the Data * Tidying the Dataset * Exploratory Analysis * Implementing the Solution * Challenging the solution * Follow-up questions

Data Relevance > All the variables given are relevant to the entrepreneur and will help know more the how the online course advertisement was recieved

Reading and checking the data

```
# downloading tidyverse packages and library
install.packages('tidyverse', repos = "http://cran.us.r-project.org")
```

```
## Installing package into 'C:/Users/Lenovo/AppData/Local/R/win-library
/4.2'
## (as 'lib' is unspecified)
```

```
## package 'tidyverse' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\Lenovo\AppData\Local\Temp\RtmpQd0pH6\downloaded_packages
```

```
library(tidyverse)
```

```
## ── Attaching packages ─────────────────────────────────────── tidyve
rse 1.3.1 ──
```

```
## ✔ ggplot2 3.3.6     ✔ purrr   0.3.4
## ✔ tibble  3.1.7     ✔ dplyr   1.0.9
```

```
## ✔ tidyr   1.2.0     ✔ stringr 1.4.0
## ✔ readr   2.1.2     ✔ forcats 0.5.1

## ── Conflicts ─────────────────────────────────────── tidyverse_co
nflicts() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()

#Read the dataset

advert <- read_csv("C://Users//Lenovo//Downloads//DB_prep//advertising.
csv")

## Rows: 1000 Columns: 10
## ── Column specification ──────────────────────────────────────────
──────────
## Delimiter: ","
## chr  (3): Ad Topic Line, City, Country
## dbl  (6): Daily Time Spent on Site, Age, Area Income, Daily Internet
 Usage, ...
## dttm (1): Timestamp
##
## ℹ Use `spec()` to retrieve the full column specification for this d
ata.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet
 this message.

#Checking the head and tail of the data

head(advert)

## # A tibble: 6 × 10
##   `Daily Time Spent…`   Age `Area Income` `Daily Interne…` `Ad Topic
 Line` City
##                 <dbl> <dbl>         <dbl>            <dbl> <chr>
      <chr>
## 1                69.0    35        61834.             256. Cloned 5t
hgene… Wrig…
## 2                80.2    31        68442.             194. Monitored
 nati… West…
## 3                69.5    26        59786.             236. Organic b
ottom… Davi…
## 4                74.2    29        54806.             246. Triple-bu
ffere… West…
## 5                68.4    35        73890.             226. Robust lo
gisti… Sout…
## 6                60.0    23        59762.             227. Sharable
 clien… Jami…
## # … with 4 more variables: Male <dbl>, Country <chr>, Timestamp <dtt
m>,
## #   `Clicked on Ad` <dbl>
```

```
tail(advert)
```

```
## # A tibble: 6 × 10
##   `Daily Time Spent…`   Age `Area Income` `Daily Interne…` `Ad Topic
 Line` City
##                 <dbl> <dbl>         <dbl>            <dbl> <chr>
       <chr>
## 1                43.7    28        63127.             173. Front-lin
e bif… Nich…
## 2                73.0    30        71385.             209. Fundament
al mo… Duff…
## 3                51.3    45        67782.             134. Grass-roo
ts co… New …
## 4                51.6    51        42416.             120. Expanded
intan… Sout…
## 5                55.6    19        41921.             188. Proactive
 band… West…
## 6                45.0    26        29876.             178. Virtual 5
thgen… Ronn…
## # … with 4 more variables: Male <dbl>, Country <chr>, Timestamp <dtt
m>,
## #   `Clicked on Ad` <dbl>
```

```
# Lists variables in the dataset
names(advert)
```

```
##  [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"
```

```
# Seeing the structure of the dataset
str(advert)
```

```
## spec_tbl_df [1,000 × 10] (S3: spec_tbl_df/tbl_df/tbl/data.frame)
##  $ Daily Time Spent on Site: num [1:1000] 69 80.2 69.5 74.2 68.4 ...
##  $ Age                     : num [1:1000] 35 31 26 29 35 23 33 48 30
 20 ...
##  $ Area Income             : num [1:1000] 61834 68442 59786 54806 73
890 ...
##  $ Daily Internet Usage    : num [1:1000] 256 194 236 246 226 ...
##  $ Ad Topic Line           : chr [1:1000] "Cloned 5thgeneration orch
estration" "Monitored national standardization" "Organic bottom-line se
rvice-desk" "Triple-buffered reciprocal time-frame" ...
##  $ City                    : chr [1:1000] "Wrightburgh" "West Jodi"
"Davidton" "West Terrifurt" ...
##  $ Male                    : num [1:1000] 0 1 0 1 0 1 0 1 1 1 ...
##  $ Country                 : chr [1:1000] "Tunisia" "Nauru" "San Mar
ino" "Italy" ...
##  $ Timestamp               : POSIXct[1:1000], format: "2016-03-27 00:
```

```
53:11" "2016-04-04 01:39:02" ...
##  $ Clicked on Ad           : num [1:1000] 0 0 0 0 0 0 0 1 0 0 ...
##  - attr(*, "spec")=
##   .. cols(
##   ..   `Daily Time Spent on Site` = col_double(),
##   ..   Age = col_double(),
##   ..   `Area Income` = col_double(),
##   ..   `Daily Internet Usage` = col_double(),
##   ..   `Ad Topic Line` = col_character(),
##   ..   City = col_character(),
##   ..   Male = col_double(),
##   ..   Country = col_character(),
##   ..   Timestamp = col_datetime(format = ""),
##   ..   `Clicked on Ad` = col_double()
##   .. )
##  - attr(*, "problems")=<externalptr>

#The rows and columns in the data
cat("The dataset has ", dim(advert)[1], "rows and ", dim(advert)[2], "
columns")

## The dataset has  1000 rows and  10  columns

#checking the datatypes on the columns
sapply(advert, class)

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

```
## [1] "POSIXct" "POSIXt"
##
## $`Clicked on Ad`
## [1] "numeric"

#summary of the dataset
#Basic descriptive statistics and frequencies.

summary(advert)

##  Daily Time Spent on Site      Age         Area Income    Daily Inte
rnet Usage
##  Min.   :32.60            Min.   :19.00   Min.   :13996   Min.   :10
4.8
##  1st Qu.:51.36            1st Qu.:29.00   1st Qu.:47032   1st Qu.:13
8.8
##  Median :68.22            Median :35.00   Median :57012   Median :18
3.1
##  Mean   :65.00            Mean   :36.01   Mean   :55000   Mean   :18
0.0
##  3rd Qu.:78.55            3rd Qu.:42.00   3rd Qu.:65471   3rd Qu.:21
8.8
##  Max.   :91.43            Max.   :61.00   Max.   :79485   Max.   :27
0.0
##  Ad Topic Line          City                Male         Country

##  Length:1000        Length:1000        Min.   :0.000   Length:1000

##  Class :character   Class :character   1st Qu.:0.000   Class :charac
ter
##  Mode  :character   Mode  :character   Median :0.000   Mode  :charac
ter
##                                        Mean   :0.481

##                                        3rd Qu.:1.000

##                                        Max.   :1.000

##    Timestamp                       Clicked on Ad
##  Min.   :2016-01-01 02:52:10.00   Min.   :0.0
##  1st Qu.:2016-02-18 02:55:42.00   1st Qu.:0.0
##  Median :2016-04-07 17:27:29.50   Median :0.5
##  Mean   :2016-04-10 10:34:06.64   Mean   :0.5
##  3rd Qu.:2016-05-31 03:18:14.00   3rd Qu.:1.0
##  Max.   :2016-07-24 00:22:16.00   Max.   :1.0
```

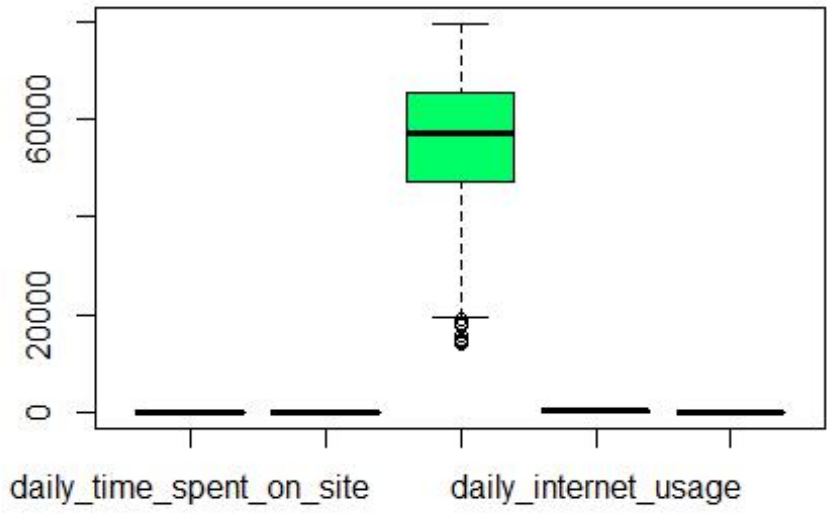
Tidying the dataset

```
## Importing packages for plotting

library(tidyr)
```

```
library(ggplot2)
library(dplyr)

names(advert)<- tolower(names(advert)) # make the column names to lower
case

names(advert)<- str_replace_all(names(advert), c(" " = "_")) # Replacin
g the white spaces in the column names

head(advert)

## # A tibble: 6 × 10
##   daily_time_spent…   age area_income daily_internet_… ad_topic_line
 city   male
##               <dbl> <dbl>       <dbl>            <dbl> <chr>
 <chr> <dbl>
## 1              69.0    35      61834.             256. Cloned 5thge…
 Wrig…     0
## 2              80.2    31      68442.             194. Monitored na…
 West…     1
## 3              69.5    26      59786.             236. Organic bott…
 Davi…     0
## 4              74.2    29      54806.             246. Triple-buffe…
 West…     1
## 5              68.4    35      73890.             226. Robust logis…
 Sout…     0
## 6              60.0    23      59762.             227. Sharable cli…
 Jami…     1
## # … with 3 more variables: country <chr>, timestamp <dttm>, clicked_
on_ad <dbl>

# Creating a Subset
df <-subset(advert, select = -c(    city,male,  country,ad_topic_line,
timestamp)) # selects Age    ,Area.Income    ,Daily.Internet.Usage,  Cl
icked.on.Ad
print("Modified Data Frame")

## [1] "Modified Data Frame"

head(df)

## # A tibble: 6 × 5
##   daily_time_spent_on_site   age area_income daily_internet_usage cl
icked_on_ad
##                      <dbl> <dbl>       <dbl>                <dbl>
      <dbl>
## 1                     69.0    35      61834.                256.
          0
## 2                     80.2    31      68442.                194.
          0
## 3                     69.5    26      59786.                236.
```

```
          0
## 4                    74.2    29      54806.                    246.
          0
## 5                    68.4    35      73890.                    226.
          0
## 6                    60.0    23      59762.                    227.
          0
```

```
#Checking for outliers
boxplot(df, col = rainbow(ncol(df)))
```



The area income has outliers only

```
# Listing the outliers
OutVals = boxplot(df, plot=FALSE)$out
OutVals
```

```
## [1] 17709.98 18819.34 15598.29 15879.10 14548.06 13996.50 14775.50 1
8368.57
```

```
#Removing outliers
advert1 <-advert

advert1<- advert1[-which(advert1$area_income %in% OutVals),]
#check the difference
print(dim(advert))
```

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

```
print(dim(advert1))
```

```
## [1] 992  10
```

```
#Checking for duplicates in data

duplicated_rows <- advert1[duplicated(advert1),]
duplicated_rows
```

```
## # A tibble: 0 × 10
## # … with 10 variables: daily_time_spent_on_site <dbl>, age <dbl>,
## #   area_income <dbl>, daily_internet_usage <dbl>, ad_topic_line <ch
r>,
## #   city <chr>, male <dbl>, country <chr>, timestamp <dttm>,
## #   clicked_on_ad <dbl>
```

No duplicates

```
# Checking the number of missing per column/variable
colSums(is.na(advert1))
```

```
## daily_time_spent_on_site                      age              area_
income
##                        0                        0
     0
##     daily_internet_usage            ad_topic_line
  city
##                        0                        0
     0
##                     male                  country                tim
estamp
##                        0                        0
     0
##            clicked_on_ad
##                        0
```

No missing data in any column

Exploratory data analysis

Univariate analysis

Measures of Central Tendency

```
#Checking the mean
advert1.dist.mean <- colMeans(subset(advert1, select = c(daily_time_spe
nt_on_site,age,  area_income,    daily_internet_usage)), na.rm = TRUE)
advert1.dist.mean
```

```
## daily_time_spent_on_site                      age              area_
income
##                 65.03979                 35.98286              55312.
```

```
80720
##     daily_internet_usage
##                179.98504
```

The mean age of those that visited the blog was 35, and on average the daily time spent was 65 minutes, and the average area income of those that visited the blog was 55312 and had average data usage of 179.98

```
# Check for median

advert1.dist.median <- apply(subset(advert1, select = c(daily_time_spen
t_on_site,age,   area_income,    daily_internet_usage)),2,median, na.rm
 = TRUE)
advert1.dist.median

## daily_time_spent_on_site                      age              area_
income
##                   68.390                   35.000               572
28.185
##     daily_internet_usage
##                  183.425
```

The median age of those that visited the blog was 35, and on median daily time spent was 68 minutes, and the median area income of those that visited the blog was 57228.185 and had a data usage of 183.425

Measures of dispersion

```
#check the minimum values of every column
advert.dist.min <- apply(subset(advert1, select = c(daily_time_spent_on
_site,age,   area_income,    daily_internet_usage)),2,min, na.rm = TRUE)
advert.dist.min

## daily_time_spent_on_site                      age              area_
income
##                    32.60                    19.00                19
345.36
##     daily_internet_usage
##                   104.78
```

The minimum age of those that visit her blog is 19 years and minimum time spent on site is 32 and the minimum area income is 19345.6 and the minimum internet usage is 104.78

```
#check the maximum values of every column
advert.dist.max <- apply(subset(advert1, select = c(daily_time_spent_on
_site,age,   area_income,    daily_internet_usage)),2,max, na.rm = TRUE)
advert.dist.max

## daily_time_spent_on_site                      age              area_
income
##                   91.43                    61.00                79
```

```
484.80
##     daily_internet_usage
##                   269.96
```

The maximum age of those that visit her blog is 61 years and maximum time spent on site is 91.43 and the maximum area income is 79484.8 and the maximum internet usage is 269.69

```
#check the range of  values of every column
advert.dist.range <- apply(subset(advert1, select = c(daily_time_spent_
on_site, age,    area_income,    daily_internet_usage)),2,range, na.rm
= TRUE)
advert.dist.range
```

```
##      daily_time_spent_on_site age area_income daily_internet_usage
## [1,]                    32.60  19    19345.36                104.78
## [2,]                    91.43  61    79484.80                269.96
```

```
#check the quantiles  values of every column
advert.dist.quantiles <- apply(subset(advert1, select = c(daily_time_sp
ent_on_site,age, area_income,    daily_internet_usage)),2,quantile, na.
rm = TRUE)
advert.dist.quantiles
```

```
##      daily_time_spent_on_site age area_income daily_internet_usage
## 0%                     32.600  19    19345.36              104.7800
## 25%                    51.285  29    47332.82              138.6475
## 50%                    68.390  35    57228.18              183.4250
## 75%                    78.585  42    65518.96              218.8425
## 100%                   91.430  61    79484.80              269.9600
```

```
#check the variation of  values of every column
#The variance is a numerical measure of how the data values is disperse
d around the mean.

advert.dist.variance <- apply(subset(advert1, select = c(daily_time_spe
nt_on_site, age, area_income,    daily_internet_usage)),2,var, na.rm =
TRUE)
advert.dist.variance
```

```
## daily_time_spent_on_site                      age              area_
income
##             2.528609e+02             7.745379e+01             1.6913
76e+08
##     daily_internet_usage
##             1.938785e+03
```

```
#check the standard deviation of  values of every column
#Standard deviation tells you how spread out the data is. It is a measu
re of how far each observed value is from the mean.
```

```
advert.dist.sd <- apply(subset(advert1, select = c(daily_time_spent_on_
site,age,    area_income,    daily_internet_usage)),2,sd, na.rm = TRUE)
advert.dist.sd
```

```
## daily_time_spent_on_site                      age              area_
income
##                15.901600                 8.800784             13005.
290554
##     daily_internet_usage
##                44.031632
```

Area income values are highly spread out from the mean

```
#check the skewness every column
install.packages("moments", repos = "http://cran.us.r-project.org")
```

```
## Installing package into 'C:/Users/Lenovo/AppData/Local/R/win-library
/4.2'
## (as 'lib' is unspecified)
```

```
## package 'moments' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\Lenovo\AppData\Local\Temp\RtmpQd0pH6\downloaded_packages
```

```
library(moments)
advert.dist.skewness <- apply(subset(advert1, select = c(daily_time_spe
nt_on_site,age,  area_income,    daily_internet_usage)),2,skewness, na.
rm = TRUE)
advert.dist.skewness
```

```
## daily_time_spent_on_site                      age              area_
income
##              -0.37679250               0.48509707              -0.57
508362
##     daily_internet_usage
##              -0.03390524
```

```
#check the kurtosis every column
#install.packages("moments")
#library(moments)
```

```
advert.dist.kurtosis <- apply(subset(advert1, select = c(daily_time_spe
nt_on_site,age,  area_income,    daily_internet_usage)),2,kurtosis, na.
rm = TRUE)
advert.dist.kurtosis
```

```
## daily_time_spent_on_site                      age              area_
income
##                1.898712                 2.599489                2.
708115
```

```
##     daily_internet_usage
##                 1.719177
```

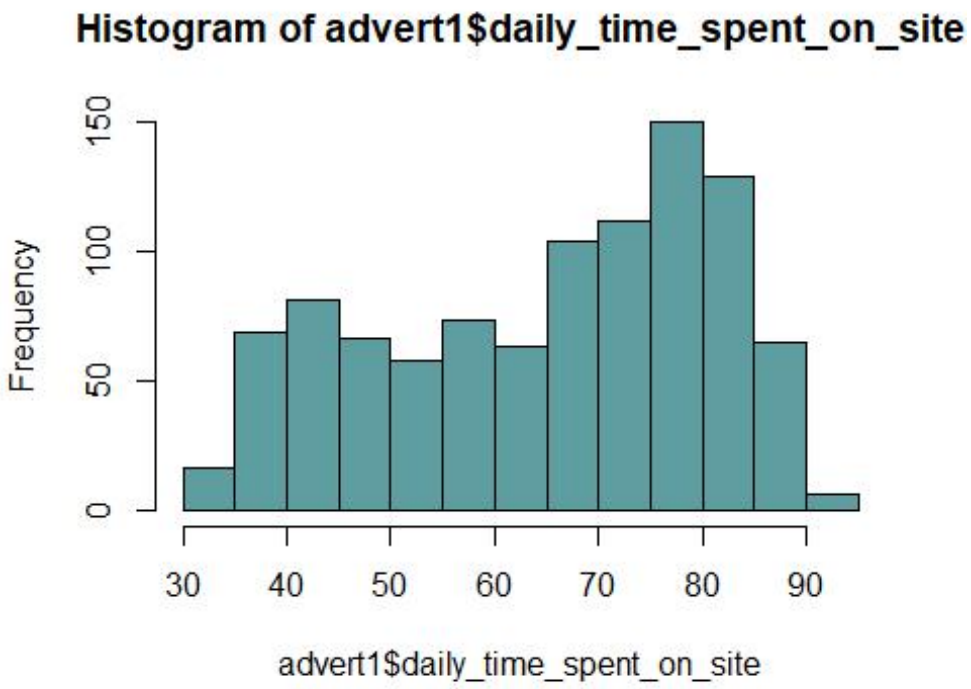
A distribution with kurtosis <3 like for all our variables is called platykurtic. Compared to a normal distribution, its tails are shorter and thinner, and often its central peak is lower and broader.

The reason for this is because the extreme values are less than that of the normal distribution.

Univariate graphical

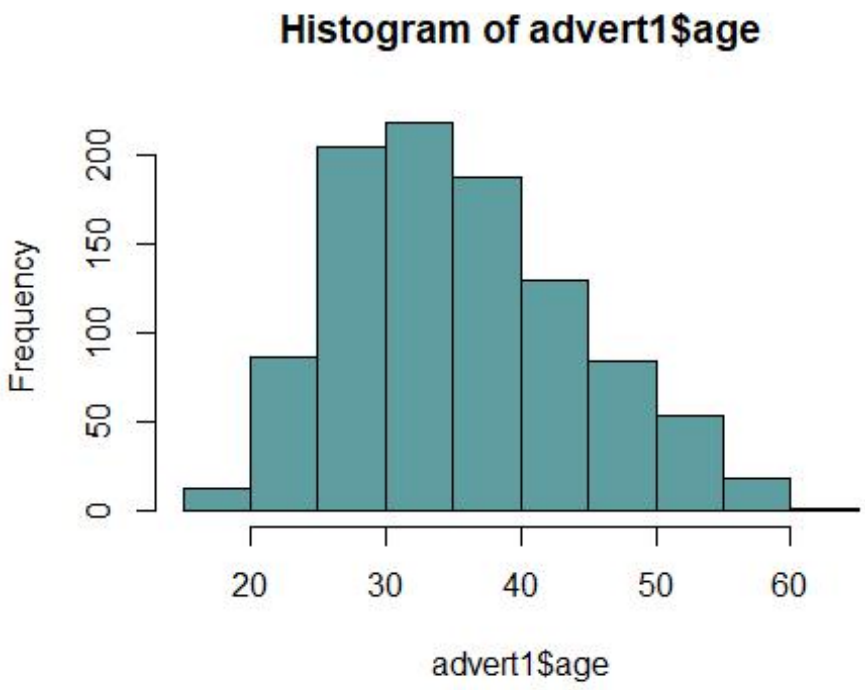
A histogram shows the frequency distribution of a quantitative variable. The area of each bar is equal to the frequency of items found in each class.

```
#see the daily_time_spent_on_site distribution
hist(advert1$daily_time_spent_on_site, col='cadetblue')
```



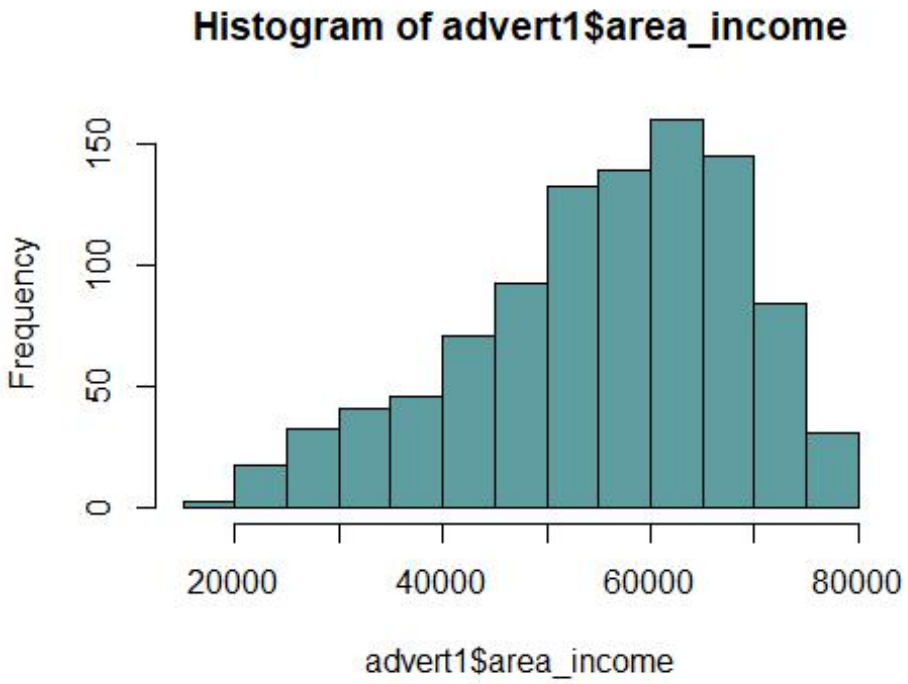
Most people spend around 70-85 daily time on the blog

```
#See the age distribution
hist(advert1$age, col='cadetblue')
```



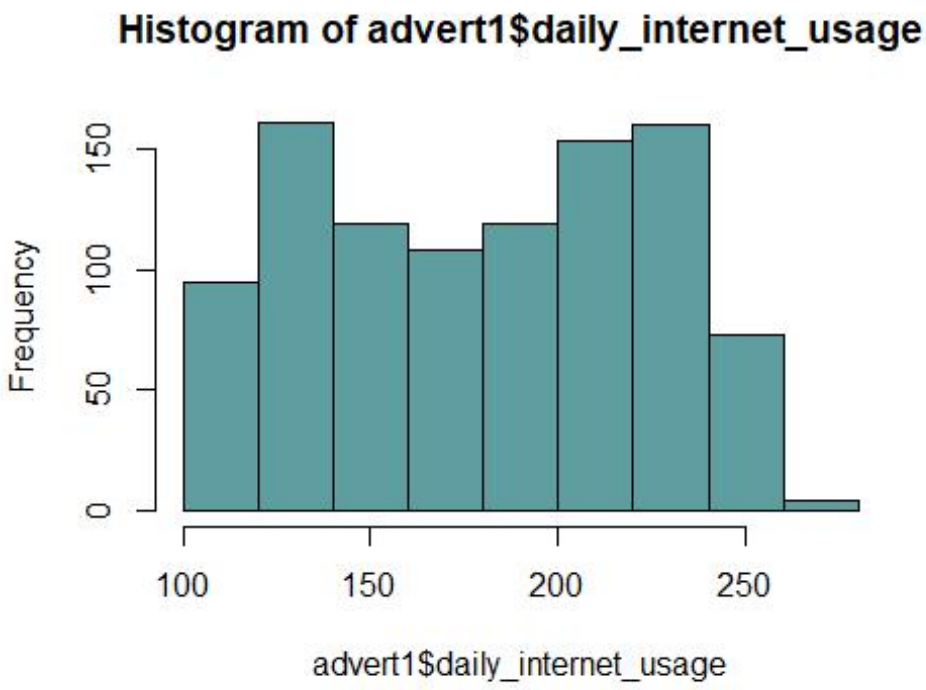
Most people that spend time on the blog are between 25-35 years

```
#See the area_income distribution
hist(advert1$area_income, col='cadetblue')
```



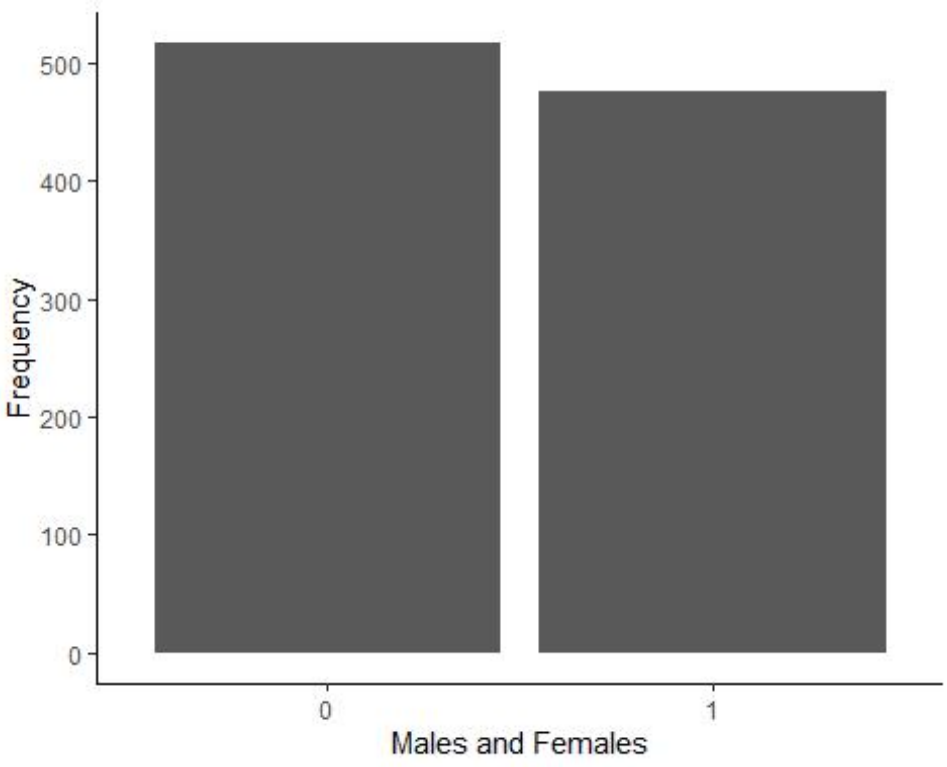
Most people that spend time on the blog have an area income of 5000-7000

```
#See the daily_internet_usage distribution
hist(advert1$daily_internet_usage, col='cadetblue')
```



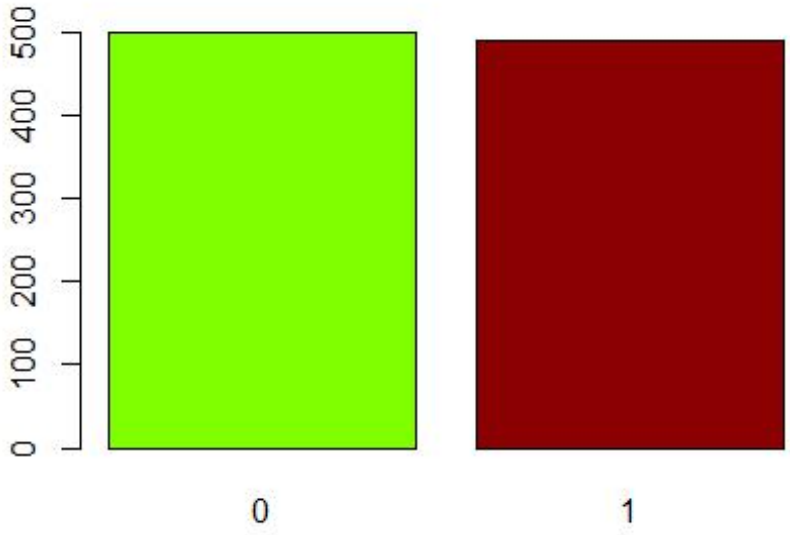
Most daily internet usage in the blog is around 120-140 and 220-240

```
ggplot(advert1,aes(x=toupper(male)))+geom_bar()+xlab(label = "Males and
 Females")+ylab(label = "Frequency")+theme_classic()
```



female is 0 hence most people on her blog are female

```
# Getting specific columns which is clicked on ad
clickad <- advert1$clicked_on_ad

# Applying the table() function will compute the frequency distribution
 of the male variable
# ---
#
clicked_ad_frequency <- table(clickad)


# Then applying the barplot function to produce its bar graph
# ---
#
barplot(clicked_ad_frequency, col=c("chartreuse", "red4"))
```



The number of people that click the ad on the blog are almost equal

```
#Distribution of the countries
table(advert1$country)
```

```
##
##                                        Afghanistan
##                                                  8
##                                            Albania
##                                                  7
##                                            Algeria
##                                                  5
##                                     American Samoa
##                                                  5
##                                            Andorra
##                                                  2
##                                             Angola
##                                                  4
##                                           Anguilla
##                                                  6
##        Antarctica (the territory South of 60 deg S)
##                                                  3
##                                  Antigua and Barbuda
##                                                  5
##                                          Argentina
##                                                  2
##                                            Armenia
```

```
##                                                 3
##                                             Aruba
##                                                 1
##                                         Australia
##                                                 8
##                                           Austria
##                                                 5
##                                        Azerbaijan
##                                                 2
##                                           Bahamas
##                                                 7
##                                           Bahrain
##                                                 5
##                                        Bangladesh
##                                                 4
##                                          Barbados
##                                                 5
##                                           Belarus
##                                                 6
##                                           Belgium
##                                                 5
##                                            Belize
##                                                 4
##                                             Benin
##                                                 2
##                                           Bermuda
##                                                 1
##                                            Bhutan
##                                                 2
##                                           Bolivia
##                                                 6
##                             Bosnia and Herzegovina
##                                                 7
##                          Bouvet Island (Bouvetoya)
##                                                 5
##                                            Brazil
##                                                 5
## British Indian Ocean Territory (Chagos Archipelago)
##                                                 1
##                             British Virgin Islands
##                                                 3
##                                  Brunei Darussalam
##                                                 5
##                                           Bulgaria
##                                                 6
##                                       Burkina Faso
##                                                 4
##                                            Burundi
##                                                 7
##                                           Cambodia
```

```
##                                                 7
##                                          Cameroon
##                                                 5
##                                            Canada
##                                                 5
##                                        Cape Verde
##                                                 1
##                                     Cayman Islands
##                                                 5
##                             Central African Republic
##                                                 2
##                                              Chad
##                                                 4
##                                             Chile
##                                                 4
##                                             China
##                                                 6
##                                   Christmas Island
##                                                 6
##                                          Colombia
##                                                 2
##                                           Comoros
##                                                 2
##                                             Congo
##                                                 4
##                                       Cook Islands
##                                                 3
##                                        Costa Rica
##                                                 6
##                                     Cote d'Ivoire
##                                                 4
##                                           Croatia
##                                                 6
##                                              Cuba
##                                                 5
##                                            Cyprus
##                                                 8
##                                     Czech Republic
##                                                 9
##                                            Denmark
##                                                 3
##                                          Djibouti
##                                                 2
##                                          Dominica
##                                                 5
##                                 Dominican Republic
##                                                 4
##                                            Ecuador
##                                                 5
##                                              Egypt
```

```
##                                                 5
##                                       El Salvador
##                                                 5
##                                 Equatorial Guinea
##                                                 4
##                                           Eritrea
##                                                 7
##                                           Estonia
##                                                 3
##                                          Ethiopia
##                                                 7
##                           Falkland Islands (Malvinas)
##                                                 4
##                                      Faroe Islands
##                                                 3
##                                              Fiji
##                                                 7
##                                           Finland
##                                                 5
##                                            France
##                                                 9
##                                      French Guiana
##                                                 4
##                                   French Polynesia
##                                                 5
##                           French Southern Territories
##                                                 5
##                                             Gabon
##                                                 6
##                                            Gambia
##                                                 2
##                                           Georgia
##                                                 4
##                                           Germany
##                                                 1
##                                             Ghana
##                                                 4
##                                         Gibraltar
##                                                 3
##                                            Greece
##                                                 8
##                                         Greenland
##                                                 5
##                                           Grenada
##                                                 4
##                                        Guadeloupe
##                                                 2
##                                              Guam
##                                                 4
##                                         Guatemala
```

```
##                                                 4
##                                          Guernsey
##                                                 3
##                                            Guinea
##                                                 3
##                                     Guinea-Bissau
##                                                 2
##                                            Guyana
##                                                 5
##                                             Haiti
##                                                 2
##                   Heard Island and McDonald Islands
##                                                 3
##                       Holy See (Vatican City State)
##                                                 3
##                                          Honduras
##                                                 5
##                                         Hong Kong
##                                                 6
##                                           Hungary
##                                                 6
##                                           Iceland
##                                                 3
##                                             India
##                                                 2
##                                         Indonesia
##                                                 6
##                                              Iran
##                                                 5
##                                           Ireland
##                                                 3
##                                         Isle of Man
##                                                 3
##                                            Israel
##                                                 4
##                                             Italy
##                                                 5
##                                           Jamaica
##                                                 5
##                                             Japan
##                                                 4
##                                            Jersey
##                                                 5
##                                            Jordan
##                                                 1
##                                        Kazakhstan
##                                                 4
##                                             Kenya
##                                                 4
##                                          Kiribati
```

```
##                                                 1
##                                             Korea
##                                                 5
##                                            Kuwait
##                                                 2
##                                    Kyrgyz Republic
##                                                 6
##                     Lao People's Democratic Republic
##                                                 4
##                                             Latvia
##                                                 4
##                                            Lebanon
##                                                 5
##                                            Lesotho
##                                                 1
##                                            Liberia
##                                                 8
##                             Libyan Arab Jamahiriya
##                                                 4
##                                      Liechtenstein
##                                                 6
##                                          Lithuania
##                                                 3
##                                         Luxembourg
##                                                 6
##                                              Macao
##                                                 3
##                                           Macedonia
##                                                 2
##                                         Madagascar
##                                                 6
##                                             Malawi
##                                                 4
##                                           Malaysia
##                                                 3
##                                           Maldives
##                                                 4
##                                               Mali
##                                                 4
##                                              Malta
##                                                 6
##                                    Marshall Islands
##                                                 1
##                                         Martinique
##                                                 4
##                                         Mauritania
##                                                 2
##                                          Mauritius
##                                                 4
##                                            Mayotte
```

```
##                                                 6
##                                            Mexico
##                                                 6
##                                        Micronesia
##                                                 8
##                                           Moldova
##                                                 6
##                                            Monaco
##                                                 3
##                                          Mongolia
##                                                 6
##                                        Montenegro
##                                                 2
##                                        Montserrat
##                                                 1
##                                           Morocco
##                                                 3
##                                        Mozambique
##                                                 1
##                                           Myanmar
##                                                 5
##                                           Namibia
##                                                 2
##                                             Nauru
##                                                 3
##                                             Nepal
##                                                 3
##                                       Netherlands
##                                                 4
##                            Netherlands Antilles
##                                                 6
##                                   New Caledonia
##                                                 2
##                                     New Zealand
##                                                 4
##                                       Nicaragua
##                                                 3
##                                           Niger
##                                                 3
##                                            Niue
##                                                 3
##                                  Norfolk Island
##                                                 5
##                       Northern Mariana Islands
##                                                 3
##                                          Norway
##                                                 2
##                                        Pakistan
##                                                 5
##                                           Palau
```

```
##                                          4
##                            Palestinian Territory
##                                          3
##                                     Panama
##                                          2
##                                 Papua New Guinea
##                                          5
##                                   Paraguay
##                                          3
##                                      Peru
##                                          8
##                                Philippines
##                                          6
##                             Pitcairn Islands
##                                          2
##                                    Poland
##                                          6
##                                   Portugal
##                                          3
##                                Puerto Rico
##                                          6
##                                     Qatar
##                                          6
##                                  Reunion
##                                          2
##                                  Romania
##                                          1
##                             Russian Federation
##                                          3
##                                   Rwanda
##                                          5
##                               Saint Barthelemy
##                                          2
##                                   Saint Helena
##                                          5
##                              Saint Kitts and Nevis
##                                          1
##                                    Saint Lucia
##                                          2
##                                   Saint Martin
##                                          4
##                          Saint Pierre and Miquelon
##                                          5
##                  Saint Vincent and the Grenadines
##                                          6
##                                       Samoa
##                                          6
##                                    San Marino
##                                          3
##                               Sao Tome and Principe
```

```
##                                                 2
##                                      Saudi Arabia
##                                                 4
##                                           Senegal
##                                                 8
##                                            Serbia
##                                                 5
##                                        Seychelles
##                                                 3
##                                      Sierra Leone
##                                                 2
##                                         Singapore
##                                                 6
##                           Slovakia (Slovak Republic)
##                                                 2
##                                          Slovenia
##                                                 1
##                                           Somalia
##                                                 5
##                                      South Africa
##                                                 8
##        South Georgia and the South Sandwich Islands
##                                                 2
##                                             Spain
##                                                 3
##                                         Sri Lanka
##                                                 4
##                                             Sudan
##                                                 2
##                                          Suriname
##                                                 2
##                         Svalbard & Jan Mayen Islands
##                                                 6
##                                         Swaziland
##                                                 2
##                                            Sweden
##                                                 4
##                                       Switzerland
##                                                 4
##                                 Syrian Arab Republic
##                                                 3
##                                             Taiwan
##                                                 7
##                                        Tajikistan
##                                                 2
##                                          Tanzania
##                                                 3
##                                          Thailand
##                                                 4
##                                       Timor-Leste
```

```
##                                                 5
##                                              Togo
##                                                 3
##                                           Tokelau
##                                                 4
##                                             Tonga
##                                                 5
##                                  Trinidad and Tobago
##                                                 3
##                                           Tunisia
##                                                 4
##                                            Turkey
##                                                 8
##                                       Turkmenistan
##                                                 6
##                           Turks and Caicos Islands
##                                                 5
##                                            Tuvalu
##                                                 4
##                                            Uganda
##                                                 4
##                                           Ukraine
##                                                 5
##                               United Arab Emirates
##                                                 6
##                                     United Kingdom
##                                                 3
##                  United States Minor Outlying Islands
##                                                 4
##                              United States of America
##                                                 5
##                         United States Virgin Islands
##                                                 4
##                                           Uruguay
##                                                 5
##                                         Uzbekistan
##                                                 2
##                                            Vanuatu
##                                                 6
##                                          Venezuela
##                                                 7
##                                            Vietnam
##                                                 3
##                                    Wallis and Futuna
##                                                 4
##                                       Western Sahara
##                                                 7
##                                              Yemen
##                                                 3
##                                             Zambia
```

```
##                                                 4
##                                          Zimbabwe
##                                                 6

tt = table(advert1$country)
max(tt)

## [1] 9
```

France have the most people that visited the blog

```
#Distribution of cities
table(advert1$city)

##
##               Adamsbury                Adamside                Adamss
tad
##                       1                       1
  1
##                Alanview           Alexanderfurt           Alexanderv
iew
##                       1                       1
  1
##           Alexandrafort             Alexisland             Aliciat
own
##                       1                       1
  1
##            Alvaradoport            Alvarezland             Amandaf
ort
##                       1                       1
  1
##             Amandahaven             Amandaland                Amyf
urt
##                       1                       1
  1
##                Amyhaven        Andersonchester             Andersonf
urt
##                       1                       1
  1
##             Andersonton          Andrewborough             Andrewmo
uth
##                       1                       1
  1
##              Angelhaven            Anthonyfurt           Ashleyches
ter
##                       1                       1
  1
##             Ashleymouth          Austinborough             Austinl
and
##                       1                       1
  1
```

```
##              Bakerhaven             Barbershire                  Beck
ton
##                       1                       1
  1
##         Benjaminchester              Bernardton                Bethbu
rgh
##                       2                       1
  1
##              Birdshire            Blairborough              Blairvi
lle
##                       1                       1
  1
##            Blevinstown               Bowenview               Boyerb
erg
##                       1                       1
  1
##          Bradleyborough            Bradleyburgh             Bradleys
ide
##                       1                       1
  1
##         Bradshawborough              Bradyfurt              Brandil
and
##                       1                       1
  1
##            Brandonbury             Brandonstad             Brandymo
uth
##                       1                       1
  1
##            Brendaburgh           Brendachester              Brianab
ury
##                       1                       1
  1
##              Brianfurt              Brianland         Brittanyboro
ugh
##                       1                       1
  1
##              Brownbury              Brownport                Brown
ton
##                       1                       1
  1
##              Browntown              Brownview              Brucebu
rgh
##                       1                       1
  1
##            Burgessside             Butlerfort               Calebb
erg
##                       1                       1
  1
##            Cameronberg           Campbellstad             Cannonb
ury
```

```
##                         1                         1
  1
##              Carsonshire              Carterburgh               Carterl
and
##                         1                         1
  1
##               Carterport               Carterton           Cassandrat
own
##                         1                         1
  1
##            Catherinefort           Cervantesshire              Chapmanl
and
##                         1                         1
  1
##             Chapmanmouth             Charlenetown              Charlesb
ury
##                         1                         1
  1
##              Charlesport            Charlottefort               Chasesh
ire
##                         1                         1
  1
##              Chrismouth           Christinehaven           Christinet
own
##                         1                         1
  1
##      Christopherchester         Christopherport        Christophervi
lle
##                         1                         1
  1
##             Clarkborough              Claytonside               Clinesh
ire
##                         1                         1
  1
##                Codyburgh              Coffeytown                Coleb
ury
##                         1                         1
  1
##             Colemanshire             Collinsburgh               Combss
tad
##                         1                         1
  1
##          Contrerasshire              Costaburgh             Courtneyf
ort
##                         1                         1
  1
##                Coxhaven              Cranemouth             Crawfordf
urt
##                         1                         1
  1
```

```
##          Cunninghamhaven              Curtisport              Curtisv
iew
##                        1                       1
  1
##             Cynthiaside              Daisymouth              Danielv
iew
##                        1                       1
  1
##              Davidmouth              Davidside               Davids
tad
##                        1                       1
  1
##                Davidton              Davidview           Daviesboro
ugh
##                        1                       1
  1
##             Davieshaven           Davilachester               Davisf
urt
##                        1                       1
  1
##                  Dayton             Deannaville             Debrabu
rgh
##                        1                       1
  1
##            Derrickhaven             Destinyfurt             Dianash
ire
##                        1                       1
  1
##              Dianaville             Donaldshire             Douglasv
iew
##                        1                       1
  1
##                Duffystad           Dustinborough           Dustinches
ter
##                        1                       1
  1
##             Dustinmouth              East Aaron             East Anth
ony
##                        1                       1
  1
##            East Barbara      East Benjaminville        East Breannaf
urt
##                        1                       1
  1
##           East Brettton          East Brianberg      East Brittanyvi
lle
##                        1                       1
  1
##             East Carlos        East Christopher    East Christopherb
ury
```

```
##                       1                       1
  1
##             East Connie               East Dana       East Deborahha
ven
##                       1                       1
  1
##       East Debraborough             East Donna          East Donnat
own
##                       1                       1
  1
##               East Eric          East Ericport         East Georges
ide
##                       1                       1
  1
##          East Graceland        East Heatherside             East He
idi
##                       1                       1
  1
##              East Henry             East Jason           East Jenni
fer
##                       1                       1
  1
##          East Jessefort              East John           East Johnp
ort
##                       1                       2
  1
##          East Kevinbury            East Lindsey            East Maur
een
##                       1                       1
  1
##        East Michaelland       East Michaelmouth        East Michaelt
own
##                       1                       1
  1
##       East Michelleberg              East Mike              East P
aul
##                       1                       1
  1
##        East Rachaelfurt         East Rachelview            East Ron
ald
##                       1                       1
  1
##      East Samanthashire            East Sharon             East Sh
awn
##                       1                       1
  1
##       East Shawnchester         East Sheriville            East Step
hen
##                       1                       1
  1
```

```
##          East Susanland             East Tammie       East Theresash
ire
##                       1                       1
  1
##       East Tiffanyport            East Timothy        East Timothyp
ort
##                       1                       2
  1
##           East Toddfort          East Troyhaven         East Tylersh
ire
##                       1                       1
  1
##            East Valerie        East Vincentstad      East Yvonneches
ter
##                       1                       1
  1
##             Edwardmouth            Edwardsmouth             Edwardsp
ort
##                       1                       1
  1
##           Elizabethbury          Elizabethmouth           Elizabethp
ort
##                       1                       1
  1
##           Elizabethstad              Emilyfurt           Ericksonmo
uth
##                       1                       1
  1
##               Erikville              Erinmouth                Erin
ton
##                       1                       1
  1
##             Estradafurt            Estradashire              Evansf
urt
##                       1                       1
  1
##              Evansville              Faithview             Florest
own
##                       1                       1
  1
##              Fosterside              Frankbury            Frankches
ter
##                       1                       1
  1
##               Frankport            Fraziershire             Garciamo
uth
##                       1                       1
  1
##              Garciaside             Garciatown             Garciav
iew
```

```
##                         1                         1
  1
##               Garnerberg          Garrettborough              Garyches
ter
##                         1                         1
  1
##             Gilbertville               Gomezport           Gonzalezbu
rgh
##                         1                         1
  1
##               Grahamberg              Gravesport           Greeneches
ter
##                         1                         1
  1
##                Greentown               Greerport                Greer
ton
##                         1                         1
  1
##                Greghaven              Guzmanland                Haleb
erg
##                         1                         1
  1
##                 Haleview                Hallfort             Hamiltonf
ort
##                         1                         1
  1
##              Hammondport              Hannahside                Hannap
ort
##                         1                         1
  1
##               Hansenland             Hansenmouth              Harmonha
ven
##                         1                         1
  1
##            Harperborough             Harrishaven           Harrisonmo
uth
##                         1                         1
  1
##          Hartmanchester                Hartport              Harveyp
ort
##                         1                         1
  1
##            Hatfieldshire             Hawkinsbury              Hayesmo
uth
##                         1                         1
  1
##               Heatherberg            Helenborough            Hendrixmo
uth
##                         1                         1
  1
```

```
##                Henryfort                Henryland         Hernandezches
ter
##                        1                        1
  1
##            Hernandezfort            Hernandezside            Hernandezvi
lle
##                        1                        1
  1
##                 Hessstad              Hintonport                Hobbsb
ury
##                        1                        1
  1
##              Holderville             Hollandberg                Hollyf
urt
##                        1                        1
  1
##             Hubbardmouth           Huffmanchester              Hughesp
ort
##                        1                        1
  1
##            Hurleyborough                Ianmouth              Ingramb
erg
##                        1                        1
  1
##             Jacksonburgh             Jacksonmouth             Jacksons
tad
##                        1                        1
  1
##                Jacobstad          Jacquelineshire                Jamesb
erg
##                        1                        1
  1
##                Jamesfurt              Jamesmouth              Jamesvi
lle
##                        1                        1
  1
##                Jamieberg               Jamiefort              Janicev
iew
##                        1                        1
  1
##              Jasminefort                Jayville             Jeffreybu
rgh
##                        1                        1
  1
##             Jeffreymouth             Jeffreyshire            Jenniferha
ven
##                        1                        1
  1
##             Jenniferstad            Jensenborough                Jensen
ton
```

```
##                       1                       1
  1
##               Jeremybury             Jeremyshire             Jessicaha
ven
##                       1                       1
  1
##             Jessicashire             Jessicastad               Joannt
own
##                       1                       1
  1
##               Joechester               Johnport             Johnsonf
ort
##                       1                       1
  1
##              Johnsontown             Johnsonview               Johnsp
ort
##                       1                       1
  1
##                  Johnstad           Johnstonmouth           Johnstonsh
ire
##                       2                       1
  1
##             Jonathanland            Jonathantown               Jonesl
and
##                       1                       1
  1
##               Jonesmouth              Jonesshire               Jones
ton
##                       1                       1
  2
##              Jordanmouth             Jordanshire              Jordant
own
##                       1                       1
  1
##              Josephberg             Josephmouth              Josephs
tad
##                       1                       1
  1
##             Joshuaburgh             Joshuamouth               Juanp
ort
##                       1                       1
  1
##                Juliaport               Julietown             Karenmo
uth
##                       1                       1
  1
##                 Karenton               Katieport             Kaylash
ire
##                       1                       1
  1
```

```
##                Keithtown                Kellytown              Kennedyf
urt
##                        1                        1
  1
##             Kennethview               Kentmouth                Kevinb
erg
##                        1                        1
  1
##            Kevinchester           Kimberlyhaven            Kimberlymo
uth
##                        1                        1
  1
##            Kimberlytown             Kingchester                Kingsh
ire
##                        1                        1
  1
##               Klineside              Knappburgh             Kristineb
erg
##                        1                        1
  1
##             Kristinfurt              Kristintown             Kyleboro
ugh
##                        1                        1
  1
##               Kylieview              Lake Adrian          Lake Allenvi
lle
##                        1                        1
  1
##             Lake Amanda                Lake Amy             Lake Ang
ela
##                        1                        1
  1
##          Lake Annashire          Lake Beckyburgh         Lake Brandonv
iew
##                        1                        1
  1
##              Lake Brian      Lake Cassandraport      Lake Charlottes
tad
##                        1                        1
  1
##    Lake Christopherfurt          Lake Conniefurt            Lake Court
ney
##                        1                        1
  1
##          Lake Craigview            Lake Cynthia            Lake Danie
lle
##                        1                        1
  1
##              Lake David      Lake Deannaborough       Lake Deborahbu
rgh
```

```
##                       2                       1
  1
##             Lake Dustin             Lake Edward      Lake Elizabeths
ide
##                       1                       1
  1
##           Lake Evantown              Lake Faith             Lake Ger
ald
##                       1                       1
  1
##             Lake Hailey               Lake Ian              Lake Ja
cob
##                       1                       1
  1
##         Lake Jacqueline             Lake James       Lake Jasonches
ter
##                       1                       2
  1
##           Lake Jennifer        Lake Jenniferton            Lake Jess
ica
##                       1                       1
  1
##       Lake Jessicaville             Lake Jesus          Lake Jillvi
lle
##                       1                       1
  1
##               Lake John          Lake Johnbury       Lake Jonathanv
iew
##                       1                       1
  1
##               Lake Jose            Lake Joseph           Lake Joset
own
##                       2                       1
  1
##         Lake Joshuafurt             Lake Kevin          Lake Kurtmo
uth
##                       1                       1
  1
##               Lake Lisa           Lake Matthew        Lake Matthewl
and
##                       1                       1
  1
##       Lake Melindamouth            Lake Michael        Lake Michaelp
ort
##                       1                       1
  1
##           Lake Michelle       Lake Michellebury            Lake Nic
ole
##                       1                       1
  1
```

```
##             Lake Patrick        Lake Rhondaburgh     Lake Stephenboro
ugh
##                        2                       1
  1
##               Lake Susan            Lake Timothy              Lake Tr
acy
##                        2                       1
  1
##             Lake Vanessa        Lake Zacharyfurt              Laurabu
rgh
##                        1                       1
  1
##              Laurieside         Lawrenceborough             Lawsonsh
ire
##                        1                       1
  1
##                 Leahside             Leonchester              Leslieb
ury
##                        1                       1
  1
##              Lesliefort              Lewismouth              Lindas
ide
##                        1                       1
  1
##            Lindsaymouth                Lisaberg               Lisaf
ort
##                        1                       1
  1
##               Lisamouth              Lopezberg              Lopezmo
uth
##                        3                       1
  1
##               Loriville              Lovemouth             Luisches
ter
##                        1                       1
  1
##                Luisfurt               Lukeport          Mackenziemo
uth
##                        1                       1
  1
##              Marcushaven             Mariahview              Marieb
ury
##                        1                       1
  1
##              Mariemouth              Markhaven             Masonha
ven
##                        1                       1
  1
##             Masseyshire               Mataberg             Mauricef
urt
```

```
##                         1                         1
  1
##             Mauriceshire             Mcdonaldfort           Mclaughlinb
ury
##                         1                         1
  1
##               Meaganfort            Meghanchester              Melanie
ton
##                         1                         1
  1
##            Melissachester              Melissafurt              Melissas
tad
##                         1                         1
  1
##              Meyerchester              Meyersstad                 Meza
ton
##                         1                         1
  1
##              Michaelland             Michaelmouth             Michaelsh
ire
##                         1                         1
  1
##              Micheletown             Michellefort             Michelles
ide
##                         1                         1
  2
##               Millerbury            Millerchester              Millerf
ort
##                         2                         1
  1
##              Millerland               Millerside              Millert
own
##                         1                         1
  2
##              Millerview               Mollyport              Monicav
iew
##                         1                         1
  1
##              Morganfort              Morganport             Morrismo
uth
##                         1                         1
  1
##             Mosleyburgh              Mullenside               Munozb
erg
##                         1                         1
  1
##             Murphymouth              Nelsonfurt              New Ama
nda
##                         1                         1
  1
```

```
##           New Angelview              New Brandy           New Brendaf
urt
##                       1                       1
  1
##      New Charleschester       New Christinatown             New Cynt
hia
##                       1                       1
  1
##        New Daniellefort            New Darlene            New Dawnl
and
##                       1                       1
  1
##          New Debbiestad          New Denisebury          New Franksh
ire
##                       1                       1
  1
##             New Gabriel              New Henry            New Jamest
own
##                       1                       1
  1
##             New Jasmine                New Jay      New Jeffreyches
ter
##                       1                       1
  1
##         New Jessicaport            New Johnberg          New Joshuap
ort
##                       2                       1
  1
##               New Juan          New Julianberg              New Ju
lie
##                       1                       1
  1
##           New Karenberg              New Kayla          New Keithbu
rgh
##                       1                       1
  1
##           New Lindaberg          New Lucasburgh          New Marcusb
ury
##                       1                       1
  1
##               New Maria             New Matthew             New Mich
ael
##                       1                       1
  1
##         New Michaeltown              New Nancy              New Nat
han
##                       1                       1
  1
##       New Patriciashire             New Patrick               New P
aul
```

```
##                       1                       1
  1
##              New Rachel             New Rebecca             New Sabr
ina
##                       1                       1
  1
##                New Sean               New Shane              New Sha
ron
##                       1                       1
  1
##              New Sheila            New Sonialand              New St
eve
##                       2                       1
  1
##               New Tammy         New Taylorburgh              New Ter
esa
##                       1                       1
  1
##             New Theresa              New Thomas             New Timo
thy
##                       1                       1
  1
##                New Tina            New Tinamouth          New Traceys
tad
##                       1                       1
  1
##              New Travis          New Travistown              New Ty
ler
##                       1                       1
  1
##               New Wanda        New Williammouth             Newmanb
erg
##                       1                       1
  1
##            Nicholasland           Nicholasport        North Aaronbu
rgh
##                       1                       1
  1
##      North Aaronchester         North Alexandra           North Anap
ort
##                       1                       1
  1
##            North Andrew        North Andrewstad        North Angelas
tad
##                       1                       1
  1
##        North Angelatown             North Anna             North Ap
ril
##                       1                       1
  1
```

```
##           North Brandon     North Brittanyburgh            North Cas
sie
##                       1                       1
  1
##       North Charlesbury       North Christopher            North Dan
iel
##                       1                       1
  2
##             North Debra        North Debrashire        North Derekvi
lle
##                       1                       1
  1
##           North Destiny         North Elizabeth         North Franks
tad
##                       1                       1
  1
##         North Garyhaven     North Isabellaville     North Jenniferbu
rgh
##                       1                       1
  1
##        North Jeremyport      North Jessicaville          North Johns
ide
##                       1                       1
  1
##          North Johntown          North Jonathan            North Jos
hua
##                       1                       1
  1
##             North Katie       North Kennethside         North Kevins
ide
##                       1                       1
  1
##          North Kimberly          North Kristine         North Laural
and
##                       1                       1
  1
##        North Laurenview         North Leonmouth       North Lisaches
ter
##                       1                       1
  1
##         North Loriburgh              North Mark          North Maryl
and
##                       1                       1
  1
##          North Mercedes           North Michael       North Monicavi
lle
##                       1                       1
  1
##             North Randy           North Raymond            North Reg
ina
```

```
##                         1                         1
  1
##       North Ricardotown      North Richardburgh       North Ronaldsh
ire
##                         1                         1
  1
##    North Russellborough          North Samantha         North Sarash
ire
##                         1                         1
  1
##           North Shannon     North Stephanieberg              North T
ara
##                         1                         1
  1
##           North Tiffany         North Tracyport         North Tylerl
and
##                         1                         1
  1
##          North Virginia     North Wesleychester              Novakt
own
##                         1                         1
  1
##               Odomville              Olsonside              Olsons
tad
##                         1                         1
  1
##              Palmerside             Pamelamouth             Parkerha
ven
##                         1                         2
  1
##           Patriciahaven           Patrickmouth              Pattymo
uth
##                         1                         1
  1
##               Paulhaven               Paulport              Paulsh
ire
##                         1                         1
  1
##             Pearsonfort               Penatown              Perezl
and
##                         1                         1
  1
##              Perryburgh            Petersonfurt           Phelpsches
ter
##                         1                         1
  1
##              Philipberg            Phillipsbury         Port Aliciab
ury
##                         1                         1
  1
```

```
##        Port Angelamouth            Port Anthony         Port Aprilvi
lle
##                       1                       1
  1
##               Port Beth              Port Blake             Port Bre
nda
##                       1                       1
  1
##             Port Brian          Port Brianfort      Port Brittanyvi
lle
##                       1                       1
  1
##         Port Brookeland         Port Calvintown             Port Cas
sie
##                       1                       1
  1
##         Port Chasemouth          Port Christina     Port Christinemo
uth
##                       1                       1
  1
##        Port Christopher Port Christopherborough            Port Crys
tal
##                       1                       1
  1
##             Port Daniel       Port Danielleberg          Port Davidl
and
##                       1                       1
  1
##             Port Dennis          Port Derekberg            Port Dest
iny
##                       1                       1
  1
##     Port Douglasborough             Port Elijah               Port E
ric
##                       1                       1
  1
##          Port Erikhaven           Port Erinberg         Port Eugenep
ort
##                       1                       1
  1
##         Port Georgebury            Port Gregory         Port Jacquel
ine
##                       1                       1
  1
##     Port Jacquelinestad              Port James            Port Jasm
ine
##                       1                       1
  1
##              Port Jason        Port Jefferybury            Port Jeff
rey
```

```
##                         2                         1
  1
##           Port Jennifer            Port Jessica       Port Jessicamo
uth
##                         1                         1
  1
##               Port Jodi         Port Joshuafort               Port J
uan
##                         1                         1
  2
##              Port Julie          Port Karenfurt        Port Katelynv
iew
##                         2                         1
  1
##       Port Kathleenfort       Port Kevinborough           Port Lawre
nce
##                         1                         1
  1
##              Port Maria             Port Mathew        Port Melissab
erg
##                         1                         1
  1
##        Port Melissastad       Port Michaelmouth       Port Michealbu
rgh
##                         1                         1
  1
##           Port Mitchell         Port Patrickton           Port Pault
own
##                         1                         1
  1
##             Port Rachel        Port Raymondfort             Port Ro
bin
##                         1                         1
  1
##         Port Sarahhaven         Port Sarahshire         Port Sherrys
tad
##                         1                         1
  1
##             Port Stacey              Port Stacy             Port Su
san
##                         1                         1
  1
##       Port Whitneyhaven            Portermouth            Pottermo
uth
##                         1                         1
  1
##              Princebury            Pruittmouth            Rachelha
ven
##                         1                         1
  1
```

```
##            Ramirezhaven              Ramirezland              Ramirezs
ide
##                       1                        1
  1
##              Ramirezton              Ramosstad            Randolphp
ort
##                       1                        1
  1
##              Randyshire           Rebeccamouth             Reginamo
uth
##                       1                        1
  1
##            Reneechester              Reyesfurt               Reyesl
and
##                       1                        1
  1
##           Rhondaborough           Richardshire             Richardsl
and
##                       1                        1
  1
##          Richardsonland        Richardsonmouth         Richardsonsh
ire
##                       1                        1
  1
##          Richardsontown             Rickymouth              Riggss
tad
##                       1                        1
  1
##              Rivasland             Robertbury              Robertf
urt
##                       1                        1
  2
##             Robertmouth             Robertside          Robertsonbu
rgh
##                       1                        1
  1
##             Robertstown             Roberttown            Robinsonl
and
##                       1                        1
  1
##            Robinsontown              Rochabury              Rogerbu
rgh
##                       1                        1
  1
##               Rogerland             Ronaldport             Ronniemo
uth
##                       1                        1
  1
##            Russellville              Ryanhaven             Sabrinav
iew
```

```
##                       1                       1
  1
##             Salazarbury            Samanthaland            Samuelboro
ugh
##                       1                       1
  1
##             Sanchezland            Sanchezmouth             Sandersl
and
##                       1                       1
  1
##              Sandraland             Sandrashire             Sandravi
lle
##                       1                       1
  1
##                Sarafurt               Sarahland                Sarah
ton
##                       1                       1
  1
##             Sellerstown               Shaneland               Sharpb
erg
##                       1                       1
  1
##               Shawnside                Shawstad               Shelbyp
ort
##                       1                       1
  2
##             Sherrishire             Shirleyfort                Silva
ton
##                       1                       1
  1
##              Smithburgh               Smithside               Smitht
own
##                       1                       1
  1
##             South Aaron             South Adam         South Adamha
ven
##                       1                       1
  1
##     South Alexisborough         South Blakestad             South Br
ian
##                       1                       1
  1
##         South Cathyfurt       South Christopher             South Co
rey
##                       1                       1
  1
##      South Cynthiashire            South Daniel      South Daniellef
ort
##                       1                       1
  1
```

```
##        South Davidhaven        South Davidmouth             South Den
ise
##                       1                       1
  1
##        South Denisefurt        South Dianeshire             South Geo
rge
##                       1                       1
  1
##             South Henry        South Jackieberg              South J
ade
##                       1                       1
  1
##         South Jaimeview       South Jasminebury        South Jeannep
ort
##                       1                       1
  1
##          South Jennifer           South Jessica              South J
ohn
##                       1                       1
  1
##       South Johnnymouth             South Kyle          South Laura
ton
##                       1                       1
  1
##         South Lauratown             South Lisa             South Man
uel
##                       1                       2
  1
##          South Margaret             South Mark             South Meg
han
##                       1                       1
  1
##     South Meredithmouth            South Pamela       South Patrickf
ort
##                       1                       1
  1
##             South Peter           South Rebecca              South Re
nee
##                       1                       1
  1
##            South Robert            South Ronald     South Stephaniep
ort
##                       1                       1
  1
##        South Tiffanyton           South Tomside              South T
roy
##                       1                       1
  1
##    South Vincentchester            South Walter              Staceyf
ort
```

```
##                         1                         1
  1
##           Stephenborough              Stewartbury              Suzannet
own
##                         1                         1
  1
##               Sylviaview              Tammymouth              Tammysh
ire
##                         1                         1
  1
##               Taylorberg              Taylorhaven              Taylormo
uth
##                         1                         1
  1
##               Taylorport              Teresahaven              Thomass
tad
##                         1                         1
  1
##               Thomasview              Timothyfurt             Timothymo
uth
##                         1                         1
  1
##              Timothyport              Timothytown              Tinaches
ter
##                         1                         1
  1
##                  Tinaton             Townsendfurt              Tracyha
ven
##                         1                         1
  1
##                Tranland                Troyville            Turnerches
ter
##                         1                         1
  1
##               Turnerview              Turnerville               Tylerp
ort
##                         1                         1
  1
##              Valerieland              Vanessastad              Vanessav
iew
##                         1                         1
  1
##           Villanuevastad            Villanuevaton              Wademo
uth
##                         1                         1
  1
##                 Wadestad            Wagnerchester            Wallaceches
ter
##                         1                         1
  1
```

```
##              Walshhaven              Waltertown              Watsonf
ort
##                       1                       1
  1
##              Welchshire               Wendyton              Wendyvi
lle
##                       1                       1
  1
##              West Alice             West Alyssa             West Ama
nda
##                       1                       1
  2
##             West Andrew             West Angela         West Angelab
ury
##                       1                       1
  1
##           West Annefort          West Aprilport          West Ariels
tad
##                       1                       1
  1
##            West Barbara           West Benjamin              West B
rad
##                       1                       1
  1
##         West Brandonton             West Brenda         West Carmenf
urt
##                       1                       1
  1
##              West Casey       West Chloeborough        West Christop
her
##                       1                       1
  1
##              West Colin             West Connor           West Court
ney
##                       1                       1
  1
##        West Daleborough          West Dannyberg             West Da
vid
##                       1                       1
  1
##             West Dennis         West Derekmouth          West Dylanb
erg
##                       1                       1
  1
##        West Eduardotown          West Ericaport           West Ericf
urt
##                       1                       1
  1
##     West Gabriellamouth          West Gregburgh            West Guyb
ury
```

```
##                       1                       1
  1
##              West James               West Jane         West Jeremys
ide
##                       1                       1
  1
##       West Jessicahaven               West Jodi             West Jos
eph
##                       1                       1
  1
##              West Julia             West Justin           West Katief
urt
##                       1                       1
  1
##          West Kevinfurt              West Lacey            West Leah
ton
##                       1                       1
  1
##        West Lindseybury               West Lisa              West Lu
cas
##                       1                       1
  1
##          West Mariafort        West Melaniefurt       West Melissash
ire
##                       1                       1
  1
##       West Michaelhaven        West Michaelport       West Michaelsh
ire
##                       1                       1
  1
##        West Michaelstad             West Pamela              West Ra
ndy
##                       1                       1
  1
##       West Raymondmouth        West Rhondamouth            West Rica
rdo
##                       1                       1
  1
##            West Richard         West Robertside            West Royt
own
##                       1                       1
  1
##            West Russell              West Ryan           West Saman
tha
##                       1                       1
  1
##            West Shannon             West Sharon              West Sh
aun
##                       2                       1
  1
```

```
##              West Steven              West Sydney              West Tan
ner
##                        2                        1
  1
##               West Tanya           West Terrifurt              West Tho
mas
##                        1                        1
  1
##           West Tinashire         West Travismouth           West Wendyl
and
##                        1                        1
  1
##             West William     West Zacharyborough               Westsh
ire
##                        1                        1
  1
##                Whiteport              Whitneyfort              Wilcoxp
ort
##                        1                        1
  1
##             Williammouth              Williamport         Williamsboro
ugh
##                        1                        1
  1
##             Williamsfort            Williamsmouth            Williamsp
ort
##                        1                        1
  3
##             Williamsside              Williamstad              Wilsonbu
rgh
##                        1                        1
  1
##              Wintersfort                 Wongland              Wrightbu
rgh
##                        1                        1
  2
##               Wrightview                Yangside               Youngbu
rgh
##                        1                        1
  1
##                Youngfort                   Yuton              Zacharys
tad
##                        1                        1
  1
##               Zacharyton
##                        1
```

Very few cities had more that one person visiting the site

```
#Distribution of cities
table(advert1$ad_topic_line)
```

```
##
##                        Adaptive 24hour Graphic Interface
##                                                        1
##                           Adaptive asynchronous attitude
##                                                        1
##                    Adaptive context-sensitive application
##                                                        1
##                   Adaptive contextually-based methodology
##                                                        1
##                      Adaptive demand-driven knowledgebase
##                                                        1
##                               Adaptive uniform capability
##                                                        1
##                                Advanced 24/7 productivity
##                                                        1
##                           Advanced 5thgeneration capability
##                                                        1
##                            Advanced didactic conglomeration
##                                                        1
##                   Advanced disintermediate data-warehouse
##                                                        1
##                             Advanced exuding conglomeration
##                                                        1
##                               Advanced full-range migration
##                                                        1
##                               Advanced heuristic firmware
##                                                        1
##                                 Advanced local task-force
##                                                        1
##                       Advanced modular Local Area Network
##                                                        1
##                            Advanced systemic productivity
##                                                        1
##                      Advanced web-enabled standardization
##                                                        1
##                            Ameliorated actuating workforce
##                                                        1
##               Ameliorated bandwidth-monitored contingency
##                                                        1
##                         Ameliorated client-driven forecast
##                                                        1
##                      Ameliorated coherent open architecture
##                                                        1
##              Ameliorated contextually-based collaboration
##                                                        1
##                               Ameliorated discrete extranet
##                                                        1
```

```
##                           Ameliorated exuding encryption
##                                                         1
##                             Ameliorated exuding solution
##                                                         1
##       Ameliorated intermediate Graphical User Interface
##                                                         1
##                         Ameliorated leadingedge help-desk
##                                                         1
##                              Ameliorated local workforce
##                                                         1
##                           Ameliorated tangible hierarchy
##                                                         1
##                   Ameliorated upward-trending definition
##                                                         1
##                        Ameliorated user-facing help-desk
##                                                         1
##                    Ameliorated well-modulated complexity
##                                                         1
##                              Assimilated actuating policy
##                                                         1
##                             Assimilated discrete strategy
##                                                         1
##                           Assimilated encompassing portal
##                                                         1
##                             Assimilated fault-tolerant hub
##                                                         1
##                      Assimilated homogeneous service-desk
##                                                         1
##                              Assimilated hybrid initiative
##                                                         1
##                          Assimilated multi-state paradigm
##                                                         1
##                       Assimilated next generation firmware
##                                                         1
##                              Assimilated stable encryption
##                                                         1
##                    Automated client-driven orchestration
##                                                         1
##                             Automated coherent flexibility
##                                                         1
##                             Automated directional function
##                                                         1
##                   Automated full-range Internet solution
##                                                         1
##                                    Automated mobile model
##                                                         1
##                             Automated multi-state toolset
##                                                         1
##                        Automated object-oriented firmware
##                                                         1
```

```
##                                Automated stable help-desk
##                                                          1
##                                  Automated static concept
##                                                          1
##                             Automated web-enabled migration
##                                                          1
##                              Balanced 4thgeneration success
##                                                          1
##                                Balanced actuating moderator
##                                                          1
##                             Balanced asynchronous hierarchy
##                                                          1
##           Balanced contextually-based pricing structure
##                                                          1
##                                 Balanced discrete approach
##                                                          1
##                  Balanced disintermediate conglomeration
##                                                          1
##                                Balanced dynamic application
##                                                          1
##                                 Balanced empowering success
##                                                          1
##                               Balanced executive definition
##                                                          1
##                                 Balanced heuristic approach
##                                                          1
##                        Balanced mobile Local Area Network
##                                                          1
##                             Balanced motivating help-desk
##                                                          1
##                           Balanced responsive open system
##                                                          1
##                                Balanced uniform algorithm
##                                                          1
##                               Balanced value-added database
##                                                          1
##      Business-focused asynchronous budgetary management
##                                                          1
##                         Business-focused background synergy
##                                                          1
##                    Business-focused client-driven forecast
##                                                          1
##                   Business-focused encompassing neural-net
##                                                          1
##                       Business-focused high-level hardware
##                                                          1
##                        Business-focused holistic benchmark
##                                                          1
##                      Business-focused maximized complexity
##                                                          1
```

```
##                       Business-focused real-time toolset
##                                                        1
##                     Business-focused responsive website
##                                                        1
##                  Business-focused transitional solution
##                                                        1
##                  Business-focused user-facing benchmark
##                                                        1
##                Business-focused value-added definition
##                                                        1
##                           Centralized 24/7 installation
##                                                        1
##                              Centralized 24hour synergy
##                                                        1
##                         Centralized asynchronous portal
##                                                        1
##            Centralized clear-thinking Graphic Interface
##                                                        1
##                     Centralized client-driven workforce
##                                                        1
##                   Centralized content-based focus group
##                                                        1
##                     Centralized logistical secured line
##                                                        1
##                       Centralized multi-state hierarchy
##                                                        1
##                          Centralized neutral neural-net
##                                                        1
##                    Centralized systematic knowledgebase
##                                                        1
##                  Centralized tertiary pricing structure
##                                                        1
##                    Centralized user-facing service-desk
##                                                        1
##                       Centralized value-added hierarchy
##                                                        1
##                     Cloned 5thgeneration orchestration
##                                                        1
##                 Cloned analyzing artificial intelligence
##                                                        1
##                                Cloned dedicated analyzer
##                                                        1
##                               Cloned explicit middleware
##                                                        1
##                             Cloned incremental matrices
##                                                        1
##                        Cloned object-oriented benchmark
##                                                        1
##                                  Cloned optimal leverage
##                                                        1
```

```
##                             Compatible composite project
##                                                        1
##                         Compatible dedicated productivity
##                                                        1
##                     Compatible intangible customer loyalty
##                                                        1
##                           Compatible intermediate concept
##                                                        1
##                            Compatible scalable emulation
##                                                        1
##                             Compatible systemic function
##                                                        1
##                                    Configurable 24/7 hub
##                                                        1
##                      Configurable asynchronous application
##                                                        1
##                       Configurable bottom-line application
##                                                        1
##                             Configurable coherent function
##                                                        1
##                    Configurable disintermediate throughput
##                                                        1
##                              Configurable dynamic adapter
##                                                        1
##                         Configurable dynamic secured line
##                                                        1
##                     Configurable fault-tolerant monitoring
##                                                        1
##                             Configurable impactful capacity
##                                                        1
##                             Configurable impactful firmware
##                                                        1
##                        Configurable impactful productivity
##                                                        1
##                       Configurable interactive contingency
##                                                        1
##        Configurable logistical Graphical User Interface
##                                                        1
##                    Configurable mission-critical algorithm
##                                                        1
##                       Configurable multi-state utilization
##                                                        1
##                 Configurable tertiary budgetary management
##                                                        1
##                           Configurable tertiary capability
##                                                        1
##                           Cross-group global orchestration
##                                                        1
##                      Cross-group human-resource time-frame
##                                                        1
```

```
##                              Cross-group neutral synergy
##                                                        1
##                    Cross-group non-volatile secured line
##                                                        1
##                             Cross-group regional website
##                                                        1
##                    Cross-group systemic customer loyalty
##                                                        1
##                           Cross-group value-added success
##                                                        1
##                  Cross-platform 4thgeneration focus group
##                                                        1
##                    Cross-platform client-server hierarchy
##                                                        1
##                       Cross-platform directional intranet
##                                                        1
##              Cross-platform logistical pricing structure
##                                                        1
##                       Cross-platform multimedia algorithm
##                                                        1
##                     Cross-platform neutral system engine
##                                                        1
##                      Cross-platform regional task-force
##                                                        1
##                     Cross-platform zero-defect structure
##                                                        1
##                             Customer-focused 24/7 concept
##                                                        1
##      Customer-focused attitude-oriented instruction set
##                                                        1
##                      Customer-focused empowering ability
##                                                        1
##                      Customer-focused explicit challenge
##                                                        1
##          Customer-focused fault-tolerant implementation
##                                                        1
##                    Customer-focused full-range neural-net
##                                                        1
##                       Customer-focused impactful success
##                                                        1
##                Customer-focused incremental system engine
##                                                        1
##        Customer-focused multi-tasking Internet solution
##                                                        1
##                     Customer-focused optimizing moderator
##                                                        1
##                Customer-focused solution-oriented software
##                                                        1
##             Customer-focused system-worthy superstructure
##                                                        1
```

```
##                   Customer-focused transitional strategy
##                                                          1
##              Customer-focused upward-trending contingency
##                                                          1
##         Customer-focused zero-defect process improvement
##                                                          1
##                Customizable 6thgeneration knowledge user
##                                                          1
##                        Customizable executive software
##                                                          1
##                          Customizable holistic archive
##                                                          1
##                    Customizable homogeneous contingency
##                                                          1
##                       Customizable hybrid system engine
##                                                          1
##         Customizable methodical Graphical User Interface
##                                                          1
##                    Customizable mission-critical adapter
##                                                          1
##                   Customizable modular Internet solution
##                                                          1
##                      Customizable multi-tasking website
##                                                          1
##                    Customizable systematic service-desk
##                                                          1
##                         Customizable tangible hierarchy
##                                                          1
##                       Customizable value-added project
##                                                          1
##                Customizable zero-defect Internet solution
##                                                          1
##                         Customizable zero-defect matrix
##                                                          1
##                       De-engineered actuating hierarchy
##                                                          1
##                De-engineered attitude-oriented projection
##                                                          1
##                     De-engineered fault-tolerant database
##                                                          1
##                    De-engineered intangible flexibility
##                                                          1
##                     De-engineered mobile infrastructure
##                                                          1
##                   De-engineered object-oriented protocol
##                                                          1
##       De-engineered solution-oriented open architecture
##                                                          1
##                      De-engineered tertiary secured line
##                                                          1
```

```
##                            Decentralized 24hour approach
##                                                        1
##                 Decentralized attitude-oriented interface
##                                                        1
##                       Decentralized bottom-line help-desk
##                                                        1
##                Decentralized client-driven data-warehouse
##                                                        1
##                   Decentralized foreground infrastructure
##                                                        1
##                       Decentralized methodical capability
##                                                        1
##                        Decentralized needs-based analyzer
##                                                        1
##                           Decentralized real-time circuit
##                                                        1
##                       Devolved exuding Local Area Network
##                                                        1
##                           Devolved human-resource circuit
##                                                        1
##                               Devolved regional moderator
##                                                        1
##                             Devolved responsive structure
##                                                        1
##                                Devolved tangible approach
##                                                        1
##                     Devolved zero administration intranet
##                                                        1
##                           Digitized content-based circuit
##                                                        1
##                      Digitized contextually-based product
##                                                        1
##                         Digitized disintermediate ability
##                                                        1
##                               Digitized global capability
##                                                        1
##                             Digitized heuristic solution
##                                                        1
##                                Digitized homogeneous core
##                                                        1
##                          Digitized interactive initiative
##                                                        1
##                            Digitized radical architecture
##                                                        1
##                                   Digitized radical array
##                                                        1
##                               Digitized static capability
##                                                        1
##                      Digitized zero-defect implementation
##                                                        1
```

```
##                   Digitized zero administration paradigm
##                                                        1
##                     Distributed 3rdgeneration definition
##                                                        1
##                         Distributed bifurcated challenge
##                                                        1
##                           Distributed cohesive migration
##                                                        1
##                  Distributed fault-tolerant service-desk
##                                                        1
##                          Distributed intangible database
##                                                        1
##                    Distributed leadingedge orchestration
##                                                        1
##                            Distributed maximized ability
##                                                        1
##                       Distributed scalable orchestration
##                                                        1
##                       Distributed tertiary system engine
##                                                        1
##                              Diverse background ability
##                                                        1
##                            Diverse directional hardware
##                                                        1
##                             Diverse executive groupware
##                                                        1
##                             Diverse leadingedge website
##                                                        1
##                               Diverse modular interface
##                                                        1
##                        Diverse multi-tasking parallelism
##                                                        1
##                                   Diverse stable circuit
##                                                        1
##                          Down-sized background groupware
##                                                        1
##                       Down-sized bandwidth-monitored core
##                                                        1
##                  Down-sized explicit budgetary management
##                                                        1
##                             Down-sized modular intranet
##                                                        1
##                           Down-sized uniform info-mediaries
##                                                        1
##                           Down-sized well-modulated archive
##                                                        1
##                            Enhanced asymmetric installation
##                                                        1
##                                 Enhanced dedicated support
##                                                        1
```

```
##                            Enhanced homogeneous moderator
##                                                         1
##                               Enhanced intangible portal
##                                                         1
##                      Enhanced intermediate standardization
##                                                         1
##                                Enhanced maximized access
##                                                         1
##                              Enhanced methodical database
##                                                         1
##                               Enhanced optimizing website
##                                                         1
##                           Enhanced regional conglomeration
##                                                         1
##                             Enhanced system-worthy toolset
##                                                         1
##                                Enhanced systematic adapter
##                                                         1
##                                Enhanced systemic benchmark
##                                                         1
##                               Enhanced tertiary utilization
##                                                         1
##                  Enhanced zero tolerance Graphic Interface
##                                                         1
##                Enterprise-wide bi-directional secured line
##                                                         1
##                  Enterprise-wide client-driven contingency
##                                                         1
##                       Enterprise-wide foreground emulation
##                                                         1
##             Enterprise-wide incremental Internet solution
##                                                         1
##                           Enterprise-wide local matrices
##                                                         1
##                           Enterprise-wide tangible model
##                                                         1
##                                  Ergonomic 24/7 solution
##                                                         1
##                        Ergonomic client-driven application
##                                                         1
##                                  Ergonomic empowering frame
##                                                         1
##                           Ergonomic full-range time-frame
##                                                         1
##                             Ergonomic methodical encoding
##                                                         1
##                           Ergonomic multi-state structure
##                                                         1
##                                  Ergonomic neutral portal
##                                                         1
```

```
##                         Ergonomic zero tolerance encoding
##                                                         1
##                             Exclusive client-driven model
##                                                         1
##                               Exclusive cohesive intranet
##                                                         1
##                Exclusive disintermediate Internet solution
##                                                         1
##                       Exclusive disintermediate task-force
##                                                         1
##                        Exclusive even-keeled moratorium
##                                                         1
##                    Exclusive multi-state Internet solution
##                                                         1
##                              Exclusive neutral parallelism
##                                                         1
##                             Exclusive systematic algorithm
##                                                         1
##                          Exclusive zero tolerance alliance
##                                                         1
##                             Exclusive zero tolerance frame
##                                                         1
##                               Expanded clear-thinking core
##                                                         1
##                                Expanded full-range synergy
##                                                         1
##                               Expanded intangible solution
##                                                         1
##                               Expanded modular application
##                                                         1
##                                  Expanded radical software
##                                                         1
##                             Expanded value-added emulation
##                                                         1
##                      Expanded zero administration attitude
##                                                         1
##                               Extended analyzing emulation
##                                                         1
##                      Extended context-sensitive monitoring
##                                                         1
##                            Extended grid-enabled hierarchy
##                                                         1
##                                 Extended interactive model
##                                                         1
##                               Extended leadingedge solution
##                                                         1
##                                  Extended local methodology
##                                                         1
##                                    Extended systemic policy
##                                                         1
```

```
##                        Face-to-face analyzing encryption
##                                                         1
##                       Face-to-face dedicated flexibility
##                                                         1
##                         Face-to-face even-keeled website
##                                                         1
##                        Face-to-face executive encryption
##                                                         1
##                       Face-to-face intermediate approach
##                                                         1
##                         Face-to-face methodical intranet
##                                                         1
##                  Face-to-face mission-critical definition
##                                                         1
##                 Face-to-face modular budgetary management
##                                                         1
##                           Face-to-face multimedia success
##                                                         1
##                        Face-to-face reciprocal methodology
##                                                         1
##                           Face-to-face responsive alliance
##                                                         1
##                              Focused 24hour implementation
##                                                         1
##                   Focused 3rdgeneration pricing structure
##                                                         1
##                                   Focused coherent success
##                                                         1
##                  Focused fresh-thinking Graphic Interface
##                                                         1
##                         Focused high-level conglomeration
##                                                         1
##                                   Focused high-level frame
##                                                         1
##                     Focused incremental Graphic Interface
##                                                         1
##                              Focused intangible moderator
##                                                         1
##                             Focused multi-state workforce
##                                                         1
##                         Focused multimedia implementation
##                                                         1
##                               Focused scalable complexity
##                                                         1
##                                Focused systemic benchmark
##                                                         1
##                             Focused upward-trending core
##                                                         1
##              Focused web-enabled Graphical User Interface
##                                                         1
```

```
##                     Front-line actuating functionalities
##                                                        1
##                  Front-line bandwidth-monitored capacity
##                                                        1
##                            Front-line bifurcated ability
##                                                        1
##                                 Front-line dynamic model
##                                                        1
##                           Front-line even-keeled website
##                                                        1
##                       Front-line fault-tolerant intranet
##                                                        1
##                   Front-line fresh-thinking installation
##                                                        1
##                    Front-line fresh-thinking open system
##                                                        1
##                      Front-line heuristic data-warehouse
##                                                        1
##                             Front-line incremental access
##                                                        1
##                         Front-line intermediate database
##                                                        1
##                        Front-line methodical utilization
##                                                        1
##                                Front-line multi-state hub
##                                                        1
##                               Front-line neutral alliance
##                                                        1
##                   Front-line non-volatile implementation
##                                                        1
##                     Front-line system-worthy flexibility
##                                                        1
##                            Front-line systemic capability
##                                                        1
##                              Front-line tangible alliance
##                                                        1
##                     Front-line upward-trending groupware
##                                                        1
##                              Front-line zero-defect array
##                                                        1
##                 Fully-configurable 5thgeneration circuit
##                                                        1
##                 Fully-configurable asynchronous firmware
##                                                        1
##             Fully-configurable clear-thinking throughput
##                                                        1
##       Fully-configurable client-driven customer loyalty
##                                                        1
##  Fully-configurable context-sensitive Graphic Interface
##                                                        1
```

```
##                     Fully-configurable eco-centric frame
##                                                         1
##                   Fully-configurable foreground solution
##                                                         1
##                  Fully-configurable high-level groupware
##                                                         1
##             Fully-configurable high-level implementation
##                                                         1
##                   Fully-configurable holistic throughput
##                                                         1
## Fully-configurable incremental Graphical User Interface
##                                                         1
##                   Fully-configurable neutral open system
##                                                         1
##                 Fully-configurable systemic productivity
##                                                         1
##           Function-based context-sensitive secured line
##                                                         1
##                  Function-based directional productivity
##                                                         1
##                       Function-based executive moderator
##                                                         1
##                     Function-based fault-tolerant model
##                                                         1
##               Function-based incremental standardization
##                                                         1
##                       Function-based optimizing extranet
##                                                         1
##                       Function-based optimizing protocol
##                                                         1
##                           Function-based stable alliance
##                                                         1
##                    Function-based transitional complexity
##                                                         1
##                 Fundamental clear-thinking knowledgebase
##                                                         1
##                    Fundamental fault-tolerant neural-net
##                                                         1
##                            Fundamental methodical support
##                                                         1
##                             Fundamental modular algorithm
##                                                         1
##                          Fundamental tangible moratorium
##                                                         1
##                       Fundamental zero tolerance solution
##                                                         1
##             Future-proofed coherent budgetary management
##                                                         1
##                          Future-proofed coherent hardware
##                                                         1
```

```
##             Future-proofed fresh-thinking conglomeration
##                                                        1
##               Future-proofed grid-enabled implementation
##                                                        1
##                   Future-proofed holistic superstructure
##                                                        1
##                       Future-proofed methodical protocol
##                                                        1
##                       Future-proofed modular utilization
##                                                        1
##                         Future-proofed responsive matrix
##                                                        1
##                           Future-proofed stable function
##                                                        1
##                       Grass-roots 4thgeneration forecast
##                                                        1
##                            Grass-roots coherent extranet
##                                                        1
##                          Grass-roots cohesive monitoring
##                                                        1
##                      Grass-roots eco-centric instruction set
##                                                        1
##                             Grass-roots empowering paradigm
##                                                        1
##                         Grass-roots impactful system engine
##                                                        1
##                       Grass-roots mission-critical emulation
##                                                        1
##                              Grass-roots multimedia policy
##                                                        1
##             Grass-roots solution-oriented conglomeration
##                                                        1
##                           Grass-roots systematic hardware
##                                                        1
##                    Grass-roots transitional flexibility
##                                                        1
##                      Horizontal client-driven hierarchy
##                                                        1
##                       Horizontal client-server database
##                                                        1
##                        Horizontal content-based synergy
##                                                        1
##                        Horizontal even-keeled challenge
##                                                        1
##                              Horizontal global leverage
##                                                        1
##                           Horizontal heuristic support
##                                                        1
##                           Horizontal heuristic synergy
##                                                        1
```

```
##                            Horizontal high-level concept
##                                                        1
##                              Horizontal hybrid challenge
##                                                        1
##                             Horizontal incremental website
##                                                        1
##                         Horizontal intermediate monitoring
##                                                        1
##                           Horizontal multi-state interface
##                                                        1
##                           Horizontal national architecture
##                                                        1
##                          Horizontal transitional challenge
##                                                        1
##                        Implemented asynchronous application
##                                                        1
##                            Implemented bifurcated workforce
##                                                        1
##                     Implemented bottom-line implementation
##                                                        1
##        Implemented context-sensitive Local Area Network
##                                                        1
##                               Implemented didactic support
##                                                        1
##                                 Implemented discrete frame
##                                                        1
##                        Implemented disintermediate attitude
##                                                        1
##                                 Implemented uniform synergy
##                                                        1
##                        Innovative background conglomeration
##                                                        1
##                       Innovative cohesive pricing structure
##                                                        1
##                               Innovative executive encoding
##                                                        1
##                            Innovative homogeneous alliance
##                                                        1
##                              Innovative interactive portal
##                                                        1
##                             Innovative maximized groupware
##                                                        1
##                              Innovative regional groupware
##                                                        1
##                              Innovative regional structure
##                                                        1
##                            Innovative user-facing extranet
##                                                        1
##                         Integrated 3rdgeneration monitoring
##                                                        1
```

```
##                       Integrated client-server definition
##                                                         1
##                     Integrated coherent pricing structure
##                                                         1
##                          Integrated encompassing support
##                                                         1
##              Integrated grid-enabled budgetary management
##                                                         1
##                         Integrated human-resource encoding
##                                                         1
##                             Integrated impactful groupware
##                                                         1
##                             Integrated interactive support
##                                                         1
##                               Integrated leadingedge frame
##                                                         1
##                          Integrated maximized service-desk
##                                                         1
##                           Integrated motivating neural-net
##                                                         1
##                                 Intuitive dynamic attitude
##                                                         1
##                          Intuitive explicit conglomeration
##                                                         1
##                                Intuitive explicit firmware
##                                                         1
##                             Intuitive exuding service-desk
##                                                         1
##                         Intuitive fresh-thinking moderator
##                                                         1
##                                   Intuitive global website
##                                                         1
##                            Intuitive modular system engine
##                                                         1
##                                 Intuitive radical forecast
##                                                         1
##           Intuitive transitional artificial intelligence
##                                                         1
##                            Intuitive zero-defect framework
##                                                         1
##                     Intuitive zero administration adapter
##                                                         1
##                        Inverse asymmetric instruction set
##                                                         1
##                     Inverse bi-directional knowledge user
##                                                         1
##                                  Inverse discrete extranet
##                                                         1
##                           Inverse high-level capability
##                                                         1
```

```
##                                     Inverse local hub
##                                                     1
##                                  Inverse national core
##                                                     1
##                        Inverse next generation moratorium
##                                                     1
##                                  Inverse stable synergy
##                                                     1
##                           Inverse zero-defect capability
##                                                     1
##                   Inverse zero tolerance customer loyalty
##                                                     1
##                                Managed 24hour analyzer
##                                                     1
##                          Managed 5thgeneration time-frame
##                                                     1
##                           Managed 6thgeneration hierarchy
##                                                     1
##              Managed attitude-oriented Internet solution
##                                                     1
##                               Managed client-server access
##                                                     1
##                               Managed didactic flexibility
##                                                     1
##                         Managed disintermediate capability
##                                                     1
##                           Managed disintermediate matrices
##                                                     1
##                               Managed eco-centric encoding
##                                                     1
##                      Managed grid-enabled standardization
##                                                     1
##                               Managed impactful definition
##                                                     1
##                                  Managed national hardware
##                                                     1
##                   Managed upward-trending instruction set
##                                                     1
##                      Managed well-modulated collaboration
##                                                     1
##                            Managed zero tolerance concept
##                                                     1
##                         Mandatory 3rdgeneration moderator
##                                                     1
##                         Mandatory 4thgeneration structure
##                                                     1
##                               Mandatory coherent groupware
##                                                     1
##                         Mandatory dedicated data-warehouse
##                                                     1
```

```
##                 Mandatory disintermediate info-mediaries
##                                                        1
##                    Mandatory disintermediate utilization
##                                                        1
##                         Mandatory empowering focus group
##                                                        1
##                       Mandatory homogeneous architecture
##                                                        1
##                                Monitored 24/7 moratorium
##                                                        1
##                   Monitored content-based implementation
##                                                        1
##                   Monitored context-sensitive initiative
##                                                        1
##                        Monitored dynamic instruction set
##                                                        1
##                         Monitored executive architecture
##                                                        1
##                             Monitored explicit hierarchy
##                                                        1
##           Monitored homogeneous artificial intelligence
##                                                        1
##                            Monitored intermediate circuit
##                                                        1
##                         Monitored local Internet solution
##                                                        1
##                       Monitored national standardization
##                                                        1
##             Monitored object-oriented Graphic Interface
##                                                        1
##                       Monitored real-time superstructure
##                                                        1
##                            Monitored systematic hierarchy
##                                                        1
##             Monitored zero administration collaboration
##                                                        1
##                      Multi-channeled 3rdgeneration model
##                                                        1
##                    Multi-channeled asymmetric installation
##                                                        1
##                   Multi-channeled asynchronous open system
##                                                        1
##                 Multi-channeled attitude-oriented toolset
##                                                        1
##                   Multi-channeled mission-critical success
##                                                        1
##                       Multi-channeled non-volatile website
##                                                        1
##      Multi-channeled reciprocal artificial intelligence
##                                                        1
```

```
##                      Multi-channeled scalable moratorium
##                                                        1
##                     Multi-lateral 24/7 Internet solution
##                                                        1
##                  Multi-lateral attitude-oriented adapter
##                                                        1
##                      Multi-lateral empowering throughput
##                                                        1
##                         Multi-lateral motivating circuit
##                                                        1
##                     Multi-lateral multi-state encryption
##                                                        1
##               Multi-layered 4thgeneration knowledge user
##                                                        1
##                  Multi-layered fresh-thinking neural-net
##                                                        1
##         Multi-layered fresh-thinking process improvement
##                                                        1
##     Multi-layered non-volatile Graphical User Interface
##                                                        1
##                         Multi-layered secondary software
##                                                        1
##                            Multi-layered stable encoding
##                                                        1
##                            Multi-layered tangible portal
##                                                        1
##                       Multi-layered user-facing paradigm
##                                                        1
##                     Multi-layered user-facing parallelism
##                                                        1
##                Multi-tiered foreground Graphic Interface
##                                                        1
##                           Multi-tiered heuristic strategy
##                                                        1
##                     Multi-tiered human-resource structure
##                                                        1
##                       Multi-tiered interactive neural-net
##                                                        1
##                            Multi-tiered maximized archive
##                                                        1
##                              Multi-tiered mobile encoding
##                                                        1
##                      Multi-tiered multi-state moderator
##                                                        1
##                     Multi-tiered real-time implementation
##                                                        1
##                              Multi-tiered stable leverage
##                                                        1
##                       Networked asymmetric infrastructure
##                                                        1
```

```
##                          Networked client-server solution
##                                                         1
##                             Networked coherent interface
##                                                         1
##                           Networked even-keeled workforce
##                                                         1
##                           Networked foreground definition
##                                                         1
##                            Networked high-level structure
##                                                         1
##                             Networked impactful framework
##                                                         1
##                              Networked local secured line
##                                                         1
##                        Networked logistical info-mediaries
##                                                         1
##                             Networked non-volatile synergy
##                                                         1
##                      Networked regional Local Area Network
##                                                         1
##                           Networked responsive application
##                                                         1
##                                      Networked stable array
##                                                         1
##                         Networked stable open architecture
##                                                         1
##                        Object-based executive productivity
##                                                         1
##                        Object-based leadingedge complexity
##                                                         1
##                       Object-based modular functionalities
##                                                         1
##                    Object-based motivating instruction set
##                                                         1
##                                 Object-based neutral policy
##                                                         1
##                               Object-based optimal solution
##                                                         1
##                     Object-based reciprocal knowledgebase
##                                                         1
##                  Object-based system-worthy superstructure
##                                                         1
##                     Open-architected full-range projection
##                                                         1
##                    Open-architected impactful productivity
##                                                         1
##                       Open-architected intangible strategy
##                                                         1
##              Open-architected needs-based customer loyalty
##                                                         1
```

```
##                   Open-architected system-worthy ability
##                                                        1
##                Open-architected system-worthy task-force
##                                                        1
##                   Open-architected web-enabled benchmark
##                                                        1
##       Open-architected zero administration secured line
##                                                        1
##                      Open-source 5thgeneration leverage
##                                                        1
##                         Open-source coherent monitoring
##                                                        1
##                              Open-source coherent policy
##                                                        1
##                        Open-source even-keeled database
##                                                        1
##                              Open-source global strategy
##                                                        1
##                       Open-source holistic productivity
##                                                        1
##                               Open-source local approach
##                                                        1
##                      Open-source optimizing parallelism
##                                                        1
##                           Open-source scalable protocol
##                                                        1
##                              Open-source stable paradigm
##                                                        1
##                        Operative actuating installation
##                                                        1
##                    Operative didactic Local Area Network
##                                                        1
##                             Operative full-range forecast
##                                                        1
##                Operative multi-tasking Graphic Interface
##                                                        1
##                              Operative scalable emulation
##                                                        1
##                     Operative secondary functionalities
##                                                        1
##                               Operative stable moderator
##                                                        1
##                        Operative system-worthy protocol
##                                                        1
##                       Optimized 5thgeneration moratorium
##                                                        1
##                   Optimized attitude-oriented initiative
##                                                        1
##                     Optimized coherent Internet solution
##                                                        1
```

```
##                          Optimized intermediate help-desk
##                                                         1
##                              Optimized multimedia website
##                                                         1
##                                  Optimized static archive
##                                                         1
##                             Optimized systemic capability
##                                                         1
##                    Optimized upward-trending productivity
##                                                         1
##                   Optional contextually-based flexibility
##                                                         1
##                Optional mission-critical functionalities
##                                                         1
##                                 Optional modular throughput
##                                                         1
##                             Optional multi-state hardware
##                                                         1
##                              Optional regional throughput
##                                                         1
##                                 Optional secondary access
##                                                         1
##                           Optional tangible productivity
##                                                         1
##                         Organic 3rdgeneration encryption
##                                                         1
##                           Organic asynchronous hierarchy
##                                                         1
##                         Organic bottom-line service-desk
##                                                         1
##                    Organic contextually-based focus group
##                                                         1
##                                 Organic interactive support
##                                                         1
##                         Organic leadingedge secured line
##                                                         1
##                               Organic logistical adapter
##                                                         1
##                                  Organic motivating model
##                                                         1
##                           Organic next generation matrix
##                                                         1
##                          Organic well-modulated database
##                                                         1
##                                Organized 24/7 middleware
##                                                         1
##                         Organized client-driven alliance
##                                                         1
##            Organized contextually-based customer loyalty
##                                                         1
```

```
##                     Organized demand-driven knowledgebase
##                                                         1
##                              Organized empowering policy
##                                                         1
##                             Organized global flexibility
##                                                         1
##                                   Organized global model
##                                                         1
##                             Organized static focus group
##                                                         1
##                      Organized upward-trending contingency
##                                                         1
##                        Persevering eco-centric flexibility
##                                                         1
##                          Persevering even-keeled help-desk
##                                                         1
##                          Persevering exuding system engine
##                                                         1
##                 Persevering needs-based open architecture
##                                                         1
##                            Persevering reciprocal firmware
##                                                         1
##                            Persevering tertiary capability
##                                                         1
##                         Persistent demand-driven interface
##                                                         1
##                         Persistent even-keeled application
##                                                         1
##                     Persistent fault-tolerant service-desk
##                                                         1
##                           Persistent homogeneous framework
##                                                         1
##                           Phased 5thgeneration open system
##                                                         1
##                                 Phased analyzing emulation
##                                                         1
##                            Phased clear-thinking encoding
##                                                         1
##                           Phased content-based middleware
##                                                         1
##                           Phased dynamic customer loyalty
##                                                         1
##                          Phased fault-tolerant definition
##                                                         1
##                                 Phased full-range hardware
##                                                         1
##                                     Phased hybrid intranet
##                                                         1
##                                Phased hybrid superstructure
##                                                         1
```

```
##                   Phased leadingedge budgetary management
##                                                          1
##                       Phased transitional instruction set
##                                                          1
##                                Phased zero-defect portal
##                                                          1
##                        Phased zero administration success
##                                                          1
##                            Phased zero tolerance extranet
##                                                          1
##                            Polarized 5thgeneration matrix
##                                                          1
##                   Polarized 6thgeneration info-mediaries
##                                                          1
##                               Polarized analyzing concept
##                                                          1
##                              Polarized analyzing intranet
##                                                          1
##                 Polarized attitude-oriented superstructure
##                                                          1
##                   Polarized bandwidth-monitored moratorium
##                                                          1
##                                Polarized bifurcated array
##                                                          1
##             Polarized clear-thinking budgetary management
##                                                          1
##                              Polarized dynamic throughput
##                                                          1
##                             Polarized intangible encoding
##                                                          1
##                                  Polarized logistical hub
##                                                          1
##                     Polarized mission-critical structure
##                                                          1
##                                Polarized modular function
##                                                          1
##                      Polarized multimedia system engine
##                                                          1
##                        Polarized tangible collaboration
##                                                          1
##                   Pre-emptive client-driven secured line
##                                                          1
##                   Pre-emptive client-server installation
##                                                          1
##                    Pre-emptive client-server open system
##                                                          1
##                  Pre-emptive cohesive budgetary management
##                                                          1
##                      Pre-emptive content-based focus group
##                                                          1
```

```
##                          Pre-emptive content-based frame
##                                                         1
##                      Pre-emptive executive knowledgebase
##                                                         1
##                          Pre-emptive neutral contingency
##                                                         1
##           Pre-emptive next generation Internet solution
##                                                         1
##                    Pre-emptive next generation strategy
##                                                         1
##             Pre-emptive systematic budgetary management
##                                                         1
##                       Pre-emptive transitional protocol
##                                                         1
##                       Pre-emptive value-added workforce
##                                                         1
##                    Pre-emptive well-modulated moderator
##                                                         1
##           Pre-emptive zero tolerance Local Area Network
##                                                         1
##                           Proactive 5thgeneration frame
##                                                         1
##            Proactive actuating Graphical User Interface
##                                                         1
##                          Proactive asymmetric definition
##                                                         1
##                    Proactive bandwidth-monitored policy
##                                                         1
##                    Proactive client-server productivity
##                                                         1
##                     Proactive context-sensitive project
##                                                         1
##                         Proactive encompassing paradigm
##                                                         1
##                      Proactive interactive service-desk
##                                                         1
##                               Proactive local focus group
##                                                         1
##                  Proactive next generation knowledge user
##                                                         1
##                        Proactive non-volatile encryption
##                                                         1
##                                Proactive radical support
##                                                         1
##                           Proactive secondary monitoring
##                                                         1
##             Profit-focused attitude-oriented task-force
##                                                         1
##                    Profit-focused dedicated utilization
##                                                         1
```

```
##                          Profit-focused secondary portal
##                                                        1
##                          Profit-focused systemic support
##                                                        1
##                    Profound bottom-line standardization
##                                                        1
##                               Profound dynamic attitude
##                                                        1
##                           Profound executive flexibility
##                                                        1
##                               Profound explicit hardware
##                                                        1
##                            Profound maximized workforce
##                                                        1
##                          Profound optimizing utilization
##                                                        1
##                                   Profound stable product
##                                                        1
##                           Profound well-modulated array
##                                                        1
##             Profound zero administration instruction set
##                                                        1
##                   Programmable asymmetric data-warehouse
##                                                        1
##                           Programmable didactic capacity
##                                                        1
##                       Programmable empowering middleware
##                                                        1
##                    Programmable empowering orchestration
##                                                        1
##                        Programmable high-level benchmark
##                                                        1
##                        Programmable uniform productivity
##                                                        1
##                             Programmable uniform website
##                                                        1
##                              Progressive 24/7 definition
##                                                        1
##                              Progressive 24hour forecast
##                                                        1
##                           Progressive analyzing attitude
##                                                        1
##                         Progressive asynchronous adapter
##                                                        1
##             Progressive clear-thinking open architecture
##                                                        1
##                           Progressive empowering alliance
##                                                        1
##                      Progressive intermediate throughput
##                                                        1
```

```
##                     Progressive non-volatile neural-net
##                                                       1
##                Progressive uniform budgetary management
##                                                       1
##                          Public-key asynchronous matrix
##                                                       1
##      Public-key bi-directional Graphical User Interface
##                                                       1
##                   Public-key disintermediate emulation
##                                                       1
##                        Public-key foreground groupware
##                                                       1
##                        Public-key impactful neural-net
##                                                       1
##          Public-key intangible Graphical User Interface
##                                                       1
##                       Public-key mission-critical core
##                                                       1
##                  Public-key non-volatile implementation
##                                                       1
##                        Public-key real-time definition
##                                                       1
##                Public-key solution-oriented focus group
##                                                       1
##                        Public-key zero-defect analyzer
##                                                       1
##             Quality-focused 5thgeneration orchestration
##                                                       1
##               Quality-focused bi-directional throughput
##                                                       1
##                           Quality-focused hybrid frame
##                                                       1
##                     Quality-focused maximized extranet
##                                                       1
##                  Quality-focused optimizing parallelism
##                                                       1
##                    Quality-focused scalable utilization
##                                                       1
##        Quality-focused zero-defect budgetary management
##                                                       1
##               Quality-focused zero-defect data-warehouse
##                                                       1
##                  Quality-focused zero tolerance matrices
##                                                       1
##                  Re-contextualized human-resource success
##                                                       1
##                    Re-contextualized optimal service-desk
##                                                       1
##                    Re-contextualized reciprocal interface
##                                                       1
```

```
##                     Re-contextualized systemic time-frame
##                                                         1
##                        Re-engineered composite moratorium
##                                                         1
##          Re-engineered context-sensitive knowledge user
##                                                         1
##                      Re-engineered demand-driven capacity
##                                                         1
##                               Re-engineered exuding frame
##                                                         1
##                           Re-engineered impactful software
##                                                         1
##                          Re-engineered intangible software
##                                                         1
##                              Re-engineered neutral success
##                                                         1
##                     Re-engineered non-volatile neural-net
##                                                         1
##                               Re-engineered optimal policy
##                                                         1
##                            Re-engineered real-time success
##                                                         1
##                        Re-engineered responsive definition
##                                                         1
##               Re-engineered zero-defect open architecture
##                                                         1
##                   Reactive bi-directional standardization
##                                                         1
##                          Reactive bi-directional workforce
##                                                         1
##                                Reactive composite project
##                                                         1
##                           Reactive demand-driven capacity
##                                                         1
##                           Reactive demand-driven strategy
##                                                         1
##                              Reactive impactful challenge
##                                                         1
##                            Reactive interactive protocol
##                                                         1
##                                 Reactive local challenge
##                                                         1
##                               Reactive national success
##                                                         1
##                        Reactive needs-based instruction set
##                                                         1
##                              Reactive responsive emulation
##                                                         1
##                              Reactive tangible contingency
##                                                         1
```

```
##                       Reactive upward-trending migration
##                                                        1
##                                    Realigned 24/7 core
##                                                        1
##                         Realigned content-based leverage
##                                                        1
##                              Realigned global initiative
##                                                        1
##                            Realigned intangible benchmark
##                                                        1
##                       Realigned intermediate application
##                                                        1
##                     Realigned next generation projection
##                                                        1
##                           Realigned reciprocal framework
##                                                        1
##                       Realigned scalable standardization
##                                                        1
##                            Realigned systematic function
##                                                        1
##                         Realigned tangible collaboration
##                                                        1
##                       Realigned zero tolerance emulation
##                                                        1
##                        Reduced background data-warehouse
##                                                        1
##                          Reduced bi-directional strategy
##                                                        1
##                                    Reduced global support
##                                                        1
##                                 Reduced holistic help-desk
##                                                        1
##                         Reduced incremental productivity
##                                                        1
##                                  Reduced mobile structure
##                                                        1
##                                 Reduced multimedia project
##                                                        1
##                       Reverse-engineered 24hour hardware
##                                                        1
##         Reverse-engineered background Graphic Interface
##                                                        1
##               Reverse-engineered content-based intranet
##                                                        1
##          Reverse-engineered context-sensitive emulation
##                                                        1
##                      Reverse-engineered dynamic function
##                                                        1
##                Reverse-engineered maximized focus group
##                                                        1
```

```
##                   Reverse-engineered web-enabled support
##                                                        1
##             Reverse-engineered well-modulated capability
##                                                        1
##                        Right-sized asynchronous website
##                                                        1
##                       Right-sized logistical middleware
##                                                        1
##                           Right-sized mobile initiative
##                                                        1
##                      Right-sized multi-tasking solution
##                                                        1
##                   Right-sized solution-oriented benchmark
##                                                        1
##                         Right-sized system-worthy project
##                                                        1
##                     Right-sized transitional parallelism
##                                                        1
##                       Right-sized value-added initiative
##                                                        1
##                     Robust context-sensitive neural-net
##                                                        1
##                           Robust dedicated system engine
##                                                        1
##                              Robust holistic application
##                                                        1
##                            Robust logistical utilization
##                                                        1
##                 Robust object-oriented Graphic Interface
##                                                        1
##                           Robust responsive collaboration
##                                                        1
##                              Robust transitional ability
##                                                        1
##                                 Robust uniform framework
##                                                        1
##                              Robust web-enabled attitude
##                                                        1
##                      Seamless 4thgeneration contingency
##                                                        1
##              Seamless bandwidth-monitored knowledge user
##                                                        1
##                        Seamless cohesive conglomeration
##                                                        1
##                    Seamless composite budgetary management
##                                                        1
##                              Seamless full-range website
##                                                        1
##                            Seamless holistic time-frame
##                                                        1
```

```
##                         Seamless impactful info-mediaries
##                                                         1
##                          Seamless intangible secured line
##                                                         1
##                              Seamless motivating approach
##                                                         1
##                        Seamless object-oriented structure
##                                                         1
##                              Seamless optimal contingency
##                                                         1
##                                  Seamless real-time array
##                                                         1
##                                     Secured 24hour policy
##                                                         1
##                         Secured clear-thinking middleware
##                                                         1
##             Secured encompassing Graphical User Interface
##                                                         1
##                                Secured intermediate approach
##                                                         1
##                    Secured scalable Graphical User Interface
##                                                         1
##                             Secured secondary superstructure
##                                                         1
##                              Secured uniform instruction set
##                                                         1
##                         Secured upward-trending benchmark
##                                                         1
##                    Self-enabling asynchronous knowledge user
##                                                         1
##                     Self-enabling didactic pricing structure
##                                                         1
##                        Self-enabling even-keeled methodology
##                                                         1
##                   Self-enabling holistic process improvement
##                                                         1
##                      Self-enabling incremental collaboration
##                                                         1
##                                  Self-enabling local strategy
##                                                         1
##                       Self-enabling multimedia system engine
##                                                         1
##                             Self-enabling optimal initiative
##                                                         1
##                             Self-enabling tertiary challenge
##                                                         1
##              Self-enabling zero administration neural-net
##                                                         1
##                                Sharable 5thgeneration access
##                                                         1
```

```
##                              Sharable analyzing alliance
##                                                         1
##                            Sharable bottom-line solution
##                                                         1
##                          Sharable client-driven software
##                                                         1
##                       Sharable dedicated Graphic Interface
##                                                         1
##                             Sharable encompassing database
##                                                         1
##                               Sharable grid-enabled matrix
##                                                         1
##                         Sharable multimedia conglomeration
##                                                         1
##                                  Sharable optimal capacity
##                                                         1
##                               Sharable reciprocal project
##                                                         1
##              Sharable secondary Graphical User Interface
##                                                         1
##                           Sharable upward-trending support
##                                                         1
##                              Sharable value-added solution
##                                                         1
##                         Stand-alone background open system
##                                                         1
##                       Stand-alone eco-centric system engine
##                                                         1
##                            Stand-alone empowering benchmark
##                                                         1
##                         Stand-alone encompassing throughput
##                                                         1
##                          Stand-alone explicit orchestration
##                                                         1
##                         Stand-alone logistical service-desk
##                                                         1
##                           Stand-alone motivating moratorium
##                                                         1
##                               Stand-alone national attitude
##                                                         1
##                            Stand-alone radical throughput
##                                                         1
##                            Stand-alone reciprocal synergy
##                                                         1
##                            Stand-alone tangible moderator
##                                                         1
##                         Stand-alone well-modulated product
##                                                         1
##                           Streamlined analyzing initiative
##                                                         1
```

```
##                      Streamlined cohesive conglomeration
##                                                        1
##                             Streamlined exuding adapter
##                                                        1
##                        Streamlined homogeneous analyzer
##                                                        1
##                      Streamlined logistical secured line
##                                                        1
##               Streamlined next generation implementation
##                                                        1
##                        Streamlined non-volatile analyzer
##                                                        1
##                             Switchable 3rdgeneration hub
##                                                        1
##                          Switchable analyzing encryption
##                                                        1
##                             Switchable mobile framework
##                                                        1
##                           Switchable multi-state success
##                                                        1
##                             Switchable real-time product
##                                                        1
##                             Switchable secondary ability
##                                                        1
##                  Switchable well-modulated infrastructure
##                                                        1
##                       Synchronized dedicated service-desk
##                                                        1
##                            Synchronized full-range portal
##                                                        1
##                        Synchronized grid-enabled moratorium
##                                                        1
##                     Synchronized human-resource moderator
##                                                        1
##                        Synchronized leadingedge help-desk
##                                                        1
##                        Synchronized multi-tasking ability
##                                                        1
##                             Synchronized multimedia model
##                                                        1
##                      Synchronized national infrastructure
##                                                        1
##                            Synchronized stable complexity
##                                                        1
##                         Synchronized systemic hierarchy
##                                                        1
##                           Synchronized user-facing core
##                                                        1
##                       Synchronized zero tolerance product
##                                                        1
```

```
##                  Synergistic asynchronous superstructure
##                                                         1
##                        Synergistic discrete middleware
##                                                         1
##                      Synergistic dynamic orchestration
##                                                         1
##                       Synergistic fresh-thinking array
##                                                         1
##                      Synergistic non-volatile analyzer
##                                                         1
##                        Synergistic reciprocal attitude
##                                                         1
##                      Synergistic stable infrastructure
##                                                         1
##                       Synergistic value-added extranet
##                                                         1
##                     Synergized clear-thinking protocol
##                                                         1
##                          Synergized coherent interface
##                                                         1
##                              Synergized cohesive array
##                                                         1
##                    Synergized context-sensitive database
##                                                         1
##                        Synergized grid-enabled framework
##                                                         1
##                             Synergized hybrid time-frame
##                                                         1
##                      Synergized intangible open system
##                                                         1
##                        Synergized multimedia emulation
##                                                         1
##                             Synergized uniform hierarchy
##                                                         1
##      Synergized well-modulated Graphical User Interface
##                                                         1
##                   Team-oriented 6thgeneration extranet
##                                                         1
##               Team-oriented bi-directional secured line
##                                                         1
##             Team-oriented context-sensitive installation
##                                                         1
##                           Team-oriented dynamic forecast
##                                                         1
##                      Team-oriented encompassing portal
##                                                         1
##                             Team-oriented executive core
##                                                         1
##           Team-oriented grid-enabled Local Area Network
##                                                         1
```

```
##                   Team-oriented high-level orchestration
##                                                       1
##                    Team-oriented systematic installation
##                                                       1
##                   Team-oriented transitional methodology
##                                                       1
##                     Team-oriented zero-defect initiative
##                                                       1
##                             Total 5thgeneration encoding
##                                                       1
##                      Total 5thgeneration standardization
##                                                       1
##                             Total bi-directional success
##                                                       1
##                            Total coherent superstructure
##                                                       1
##                                Total cohesive moratorium
##                                                       1
##                               Total directional approach
##                                                       1
##                            Total even-keeled architecture
##                                                       1
##                            Total grid-enabled application
##                                                       1
##                          Total human-resource flexibility
##                                                       1
##                                       Total local synergy
##                                                       1
##                                Total user-facing hierarchy
##                                                       1
##                           Total zero administration software
##                                                       1
##                     Triple-buffered 3rdgeneration migration
##                                                       1
##                     Triple-buffered demand-driven alliance
##                                                       1
##                      Triple-buffered foreground encryption
##                                                       1
##                   Triple-buffered human-resource complexity
##                                                       1
##                      Triple-buffered multi-state complexity
##                                                       1
##             Triple-buffered needs-based Local Area Network
##                                                       1
##                       Triple-buffered reciprocal time-frame
##                                                       1
##                            Triple-buffered regional toolset
##                                                       1
##                          Triple-buffered scalable groupware
##                                                       1
```

```
##                Triple-buffered systematic info-mediaries
##                                                        1
##                            Universal 24/7 implementation
##                                                        1
##                             Universal asymmetric archive
##                                                        1
##                           Universal asymmetric workforce
##                                                        1
##                         Universal bi-directional extranet
##                                                        1
##               Universal contextually-based system engine
##                                                        1
##                             Universal empowering adapter
##                                                        1
##                           Universal even-keeled analyzer
##                                                        1
##                                Universal global intranet
##                                                        1
##                             Universal incremental array
##                                                        1
##                       Universal multi-state system engine
##                                                        1
##         Universal transitional Graphical User Interface
##                                                        1
##                         Up-sized 6thgeneration moratorium
##                                                        1
##                             Up-sized asymmetric firmware
##                                                        1
##                    Up-sized bi-directional infrastructure
##                                                        1
##                           Up-sized bifurcated capability
##                                                        1
##                             Up-sized executive moderator
##                                                        1
##                          Up-sized incremental encryption
##                                                        1
##                             Up-sized intangible circuit
##                                                        1
##                                Up-sized maximized model
##                                                        1
##                     Up-sized next generation architecture
##                                                        1
##                           Up-sized real-time methodology
##                                                        1
##                             Up-sized secondary software
##                                                        1
##                            Up-sized tertiary contingency
##                                                        1
##                          Upgradable 4thgeneration portal
##                                                        1
```

```
##                          Upgradable asymmetric emulation
##                                                         1
##                          Upgradable asynchronous circuit
##                                                         1
##                     Upgradable directional system engine
##                                                         1
##                         Upgradable even-keeled challenge
##                                                         1
##                          Upgradable even-keeled hardware
##                                                         1
##                       Upgradable heuristic system engine
##                                                         1
##                                Upgradable local migration
##                                                         1
##                        Upgradable logistical flexibility
##                                                         1
##                     Upgradable multi-tasking initiative
##                                                         1
##                           Upgradable optimizing toolset
##                                                         1
##                          Upgradable system-worthy array
##                                                         1
##                  User-centric attitude-oriented adapter
##                                                         1
##                      User-centric composite contingency
##                                                         1
##                           User-centric discrete success
##                                                         1
##                     User-centric intangible contingency
##                                                         1
##                      User-centric intangible task-force
##                                                         1
##                 User-centric intermediate knowledge user
##                                                         1
##                 User-centric solution-oriented emulation
##                                                         1
##                  User-friendly asymmetric info-mediaries
##                                                         1
##               User-friendly bandwidth-monitored attitude
##                                                         1
##              User-friendly client-server instruction set
##                                                         1
##             User-friendly content-based customer loyalty
##                                                         1
##                      User-friendly grid-enabled analyzer
##                                                         1
##                      User-friendly impactful time-frame
##                                                         1
##                   User-friendly upward-trending intranet
##                                                         1
```

```
##                    User-friendly well-modulated leverage
##                                                        1
##                    Versatile 4thgeneration system engine
##                                                        1
##                      Versatile 6thgeneration parallelism
##                                                        1
##                         Versatile content-based protocol
##                                                        1
##                             Versatile dedicated software
##                                                        1
##                           Versatile homogeneous capacity
##                                                        1
##                                Versatile local forecast
##                                                        1
##                     Versatile mission-critical application
##                                                        1
##             Versatile next generation pricing structure
##                                                        1
##                           Versatile optimizing projection
##                                                        1
##                            Versatile reciprocal structure
##                                                        1
##                       Versatile responsive knowledge user
##                                                        1
##                             Versatile scalable encryption
##                                                        1
##                  Versatile solution-oriented secured line
##                                                        1
##                         Versatile transitional monitoring
##                                                        1
##                           Virtual 5thgeneration emulation
##                                                        1
##                          Virtual 5thgeneration neural-net
##                                                        1
##                    Virtual bandwidth-monitored initiative
##                                                        1
##                                 Virtual bifurcated portal
##                                                        1
##                                   Virtual composite model
##                                                        1
##                         Virtual context-sensitive support
##                                                        1
##                          Virtual executive implementation
##                                                        1
##                  Virtual homogeneous budgetary management
##                                                        1
##                             Virtual impactful algorithm
##                                                        1
##                           Virtual scalable secured line
##                                                        1
```

```
##          Vision-oriented asynchronous Internet solution
##                                                        1
##    Vision-oriented attitude-oriented Internet solution
##                                                        1
##                 Vision-oriented bifurcated contingency
##                                                        1
##            Vision-oriented contextually-based extranet
##                                                        1
##                 Vision-oriented human-resource synergy
##                                                        1
##                     Vision-oriented methodical support
##                                                        1
##                  Vision-oriented multi-tasking success
##                                                        1
##               Vision-oriented next generation solution
##                                                        1
##                  Vision-oriented optimizing middleware
##                                                        1
##                    Vision-oriented real-time framework
##                                                        1
##                 Vision-oriented system-worthy forecast
##                                                        1
##                  Vision-oriented uniform knowledgebase
##                                                        1
##                          Visionary analyzing structure
##                                                        1
##                        Visionary asymmetric encryption
##                                                        1
##                    Visionary client-driven installation
##                                                        1
##                 Visionary maximized process improvement
##                                                        1
##                  Visionary mission-critical application
##                                                        1
##                       Visionary multi-tasking alliance
##                                                        1
##                           Visionary reciprocal circuit
##                                                        1
```

Bivariate analysis

```
names(advert1)
```

```
##  [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"
```

```
#Assigning the each column to the  their variable for easier manipulati
on
```

```
age <- advert1$age

daily_time_spent_on_site <- advert1$daily_time_spent_on_site

area_income <- advert1$area_income

daily_internet_usage <- advert1$daily_internet_usage
```

Covariance of various variables

Age and other variables

```
cov(age, daily_time_spent_on_site)

## [1] -46.5009

cov(age, area_income)

## [1] -20614.92

cov(age, daily_internet_usage)

## [1] -142.5798
```

Area income and other variables

```
cov( area_income, daily_time_spent_on_site)

## [1] 65151.28

cov( area_income, daily_internet_usage)

## [1] 200896.3
```

Daily internet usage and daily time spent

```
cov( daily_time_spent_on_site, daily_internet_usage)

## [1] 363.8961
```

Covariance indicates the relationship of two variables whenever one variable changes.

If an increase in one variable results in an increase in the other variable, both variables are said to have a positive covariance.

Area income and daily time spent, area income and daily internet usage and daily internet usage and daily internet usage have positive covariance

Area income and internet usage have the strongest positive relationship

Decreases in one variable also cause a decrease in the other. Both variables move together in the same direction when they change.

Age and the other variables have negative covariance

age and area income have the highest negative relationship

Correlation Coefficient

```
cor(age, daily_time_spent_on_site)
```

```
## [1] -0.3322762
```

```
cor(age, area_income)
```

```
## [1] -0.180111
```

```
cor(age, daily_internet_usage)
```

```
## [1] -0.3679358
```

```
cor( area_income, daily_time_spent_on_site)
```

```
## [1] 0.3150374
```

```
cor( area_income, daily_internet_usage)
```

```
## [1] 0.3508222
```

```
cor( daily_time_spent_on_site, daily_internet_usage)
```

```
## [1] 0.5197228
```

Age and other variables are weakly negatively linearly related

While daily time spent on site and daily internet usage has the highest positive linearly relationship

Correlation matrix

```
install.packages("corrplot", repos = "http://cran.us.r-project.org") # used to draw correlation matrix
```

```
## Installing package into 'C:/Users/Lenovo/AppData/Local/R/win-library/4.2'
## (as 'lib' is unspecified)
```

```
## package 'corrplot' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\Lenovo\AppData\Local\Temp\RtmpQd0pH6\downloaded_packages
```

Plotting a correlation matrix

```
M<-cor(df) #find the correlation
library(corrplot)
```

```
## corrplot 0.92 loaded
```

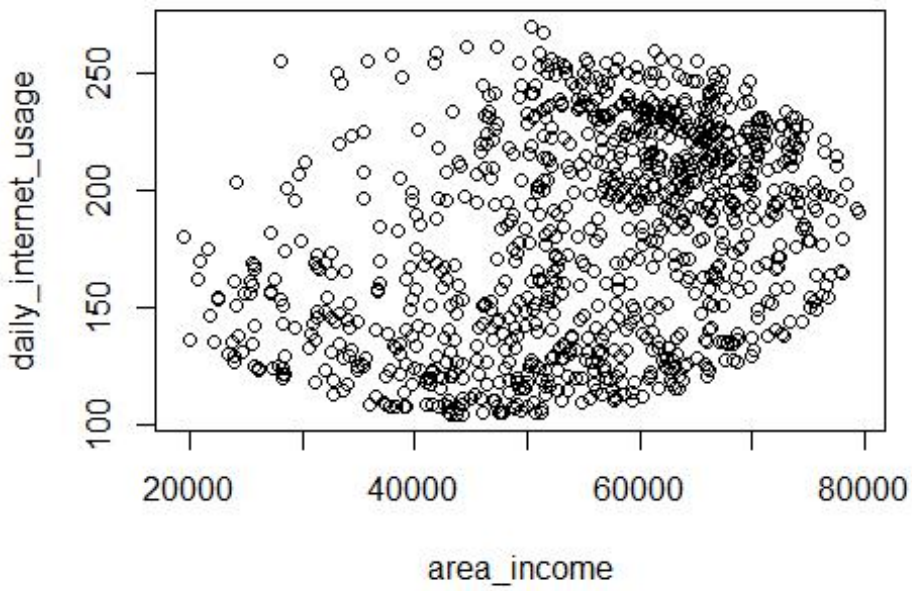
```
corrplot(M, method="number") #Compute and visualize the correlation coe
fficients
```

Those with blue have positive correlation coefficient while those in red have negative correlation coefficient

Scatter plot

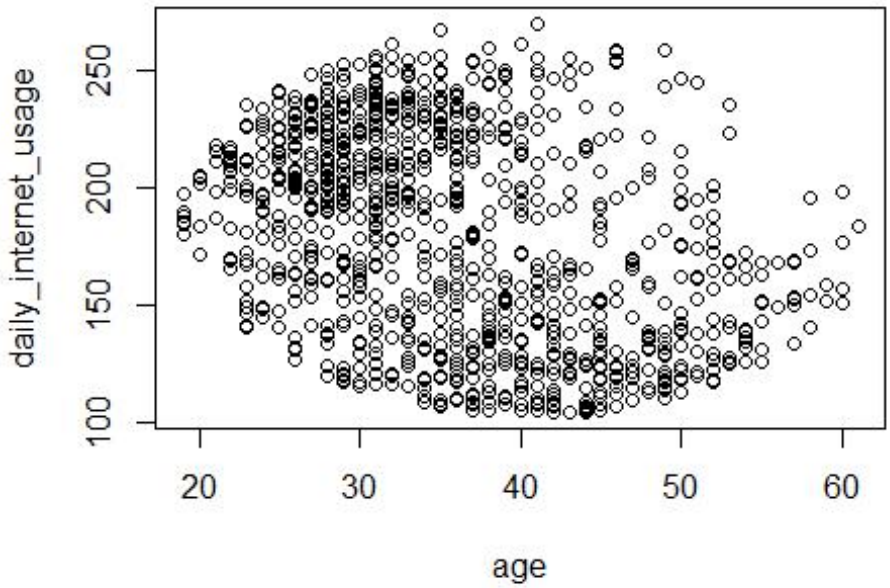
Area income and internet usage

```
plot(area_income,daily_internet_usage,  xlab="area_income", ylab="daily
_internet_usage")
```



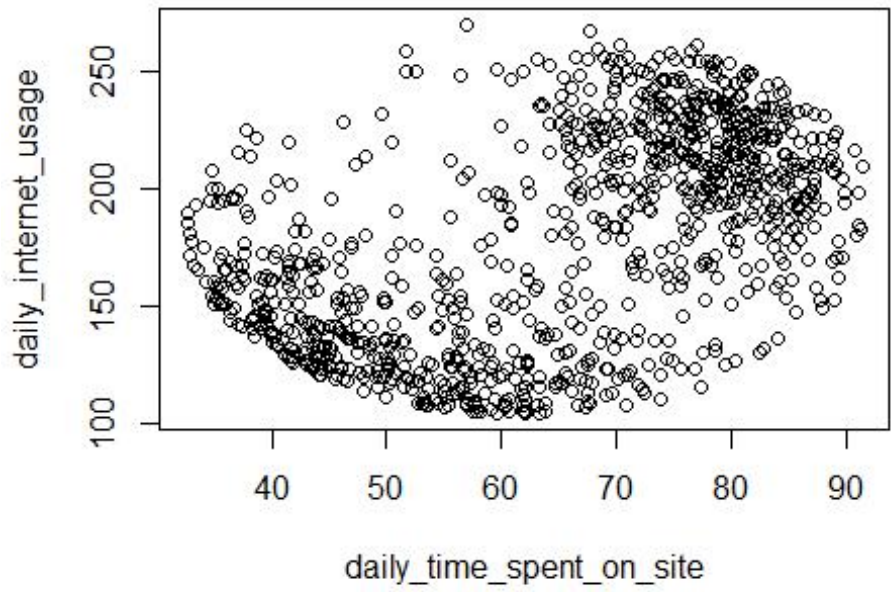
Age and Internet usage

```
plot(age,daily_internet_usage,  xlab="age", ylab="daily_internet_usage")
```



The scatter plots above reveals a weak relationships between area_internet and internet_usage and age and internet_usage

```
plot(daily_time_spent_on_site,daily_internet_usage,  xlab="daily_time_s
pent_on_site", ylab="daily_internet_usage")
```



The scatter plot above reveals a moderate positive relationship between daily_time-spent and internet_usage and age and internet_usage

Implementing the solution

```
#Create a dataframe that selects those that clicked an ad

yes <-  advert1 %>% filter(advert1$clicked_on_ad  == 1);   # Select tho
se  clicked on ad

#summary of those that clicked the ad
summary(yes)
```

```
##  daily_time_spent_on_site      age         area_income    daily_inte
rnet_usage
##  Min.   :32.60           Min.   :19.00   Min.   :19345   Min.   :10
4.8
##  1st Qu.:42.58           1st Qu.:34.00   1st Qu.:39697   1st Qu.:12
3.3
##  Median :51.27           Median :40.00   Median :49867   Median :13
8.5
##  Mean   :53.03           Mean   :40.35   Mean   :49141   Mean   :14
```

```
4.9
##  3rd Qu.:61.92            3rd Qu.:47.00   3rd Qu.:59403   3rd Qu.:16
0.4
##  Max.   :91.37            Max.   :61.00   Max.   :78521   Max.   :27
0.0
##  ad_topic_line          city                male          country

##  Length:492         Length:492         Min.   :0.0000   Length:492

##  Class :character   Class :character   1st Qu.:0.0000   Class :chara
cter
##  Mode  :character   Mode  :character   Median :0.0000   Mode  :chara
cter
##                                        Mean   :0.4573

##                                        3rd Qu.:1.0000

##                                        Max.   :1.0000

##    timestamp                       clicked_on_ad
##  Min.   :2016-01-01 15:14:24.00   Min.   :1
##  1st Qu.:2016-02-17 23:19:07.25   1st Qu.:1
##  Median :2016-04-07 20:36:22.00   Median :1
##  Mean   :2016-04-10 17:57:40.06   Mean   :1
##  3rd Qu.:2016-05-31 03:18:14.00   3rd Qu.:1
##  Max.   :2016-07-24 00:22:16.00   Max.   :1
```

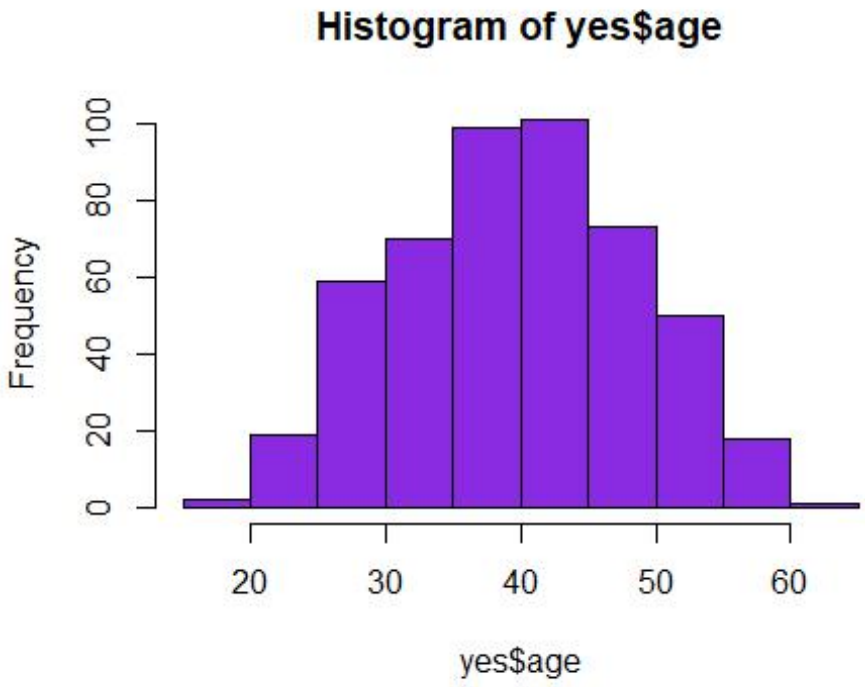
The mean years of those that clicked the ad was 40years

The mean daily time of those that clicked the ad spent was 53

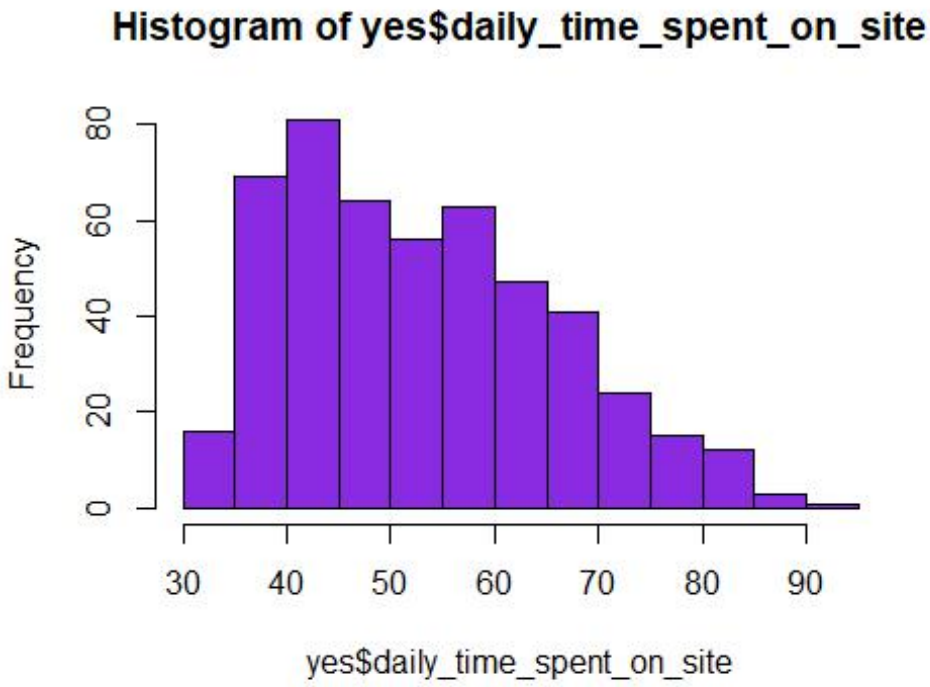
The area income mean of those that clicked the ad was 49141

The daily internet usage mean was 144.9

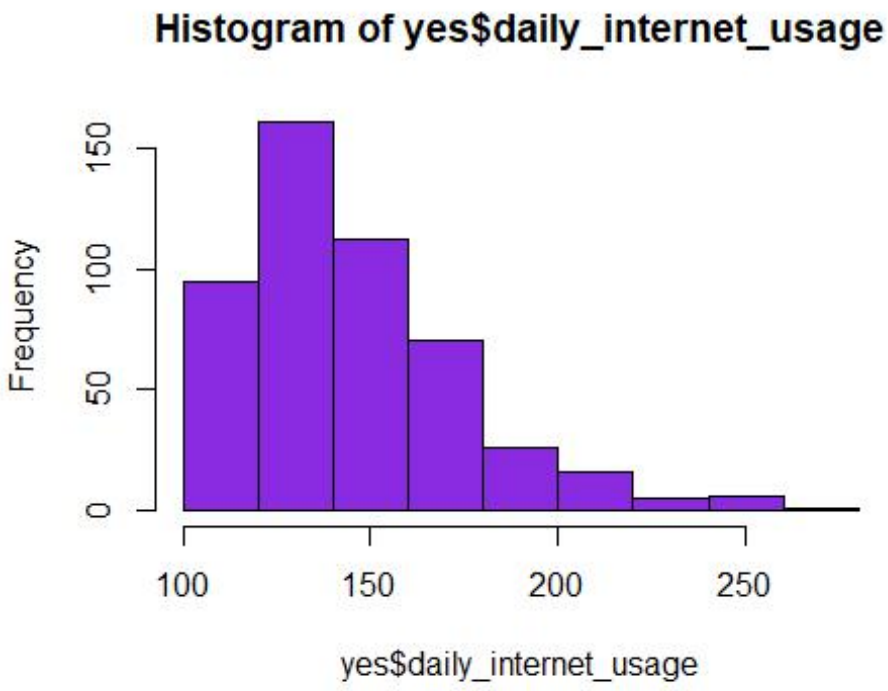
```
#See the age distribution
hist(yes$age, col='blueviolet')
```



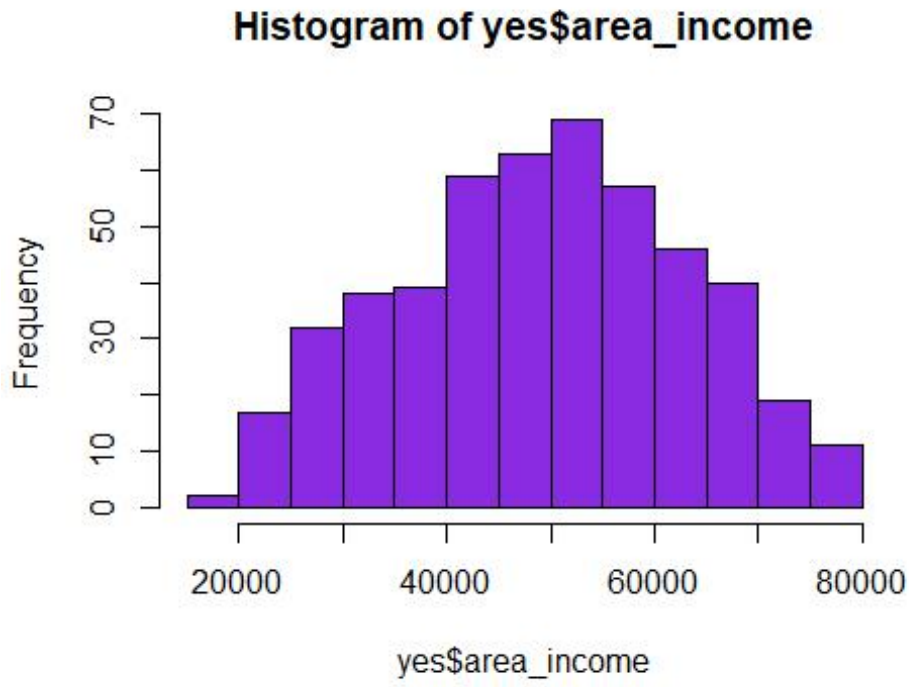

```
#See the daily_time_spent_on_site distribution
hist(yes$daily_time_spent_on_site, col='blueviolet')
```



```r
#See the daily_internet_usage distribution
hist(yes$daily_internet_usage, col='blueviolet')
```



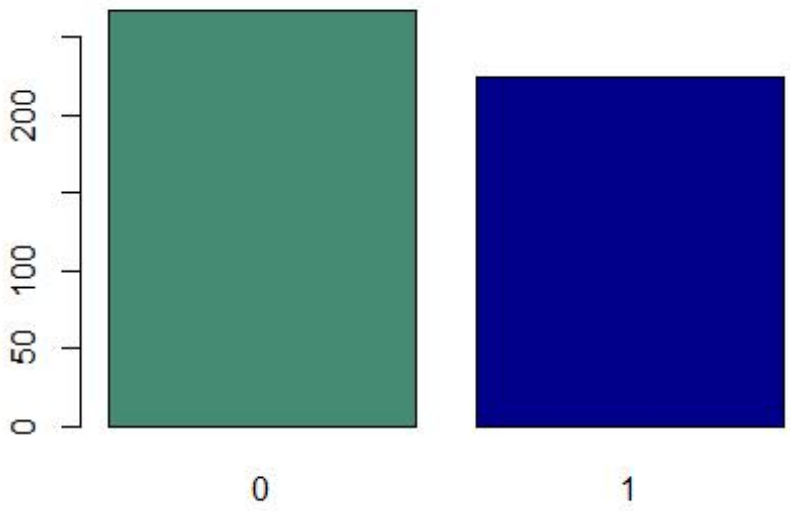

```r
#See the area_income distribution
hist(yes$area_income, col='blueviolet')
```



Those that clicked the ad most

- were around the ages of 30-40
- daily spent time on site was 35-50,
- have a daily internet usage of 100-150
- had an area income 40000-55000

```
# Getting specific column - male
male1 <- yes$male

# Applying the table() function will compute the frequency distribution
 of the male variable
# ---
#
males_frequency1 <- table(male1)


# Then applying the barplot function to produce its bar graph
# ---
#
barplot(males_frequency1, col=c("aquamarine4", "blue4"))
```



More females clicked on the ad than males Female=0

```
#Distribution of the countries

yy= table(yes$country)

print(max(yy))

## [1] 7

yy

##
##                                          Afghanistan
##                                                    5
##                                              Albania
##                                                    4
##                                              Algeria
##                                                    2
##                                       American Samoa
##                                                    3
##                                              Andorra
##                                                    2
##                                               Angola
##                                                    1
##                                             Anguilla
##                                                    3
```

```
##        Antarctica (the territory South of 60 deg S)
##                                                   2
##                                  Antigua and Barbuda
##                                                   4
##                                           Argentina
##                                                   1
##                                             Armenia
##                                                   1
##                                           Australia
##                                                   7
##                                             Austria
##                                                   1
##                                             Bahamas
##                                                   4
##                                             Bahrain
##                                                   2
##                                          Bangladesh
##                                                   2
##                                            Barbados
##                                                   2
##                                             Belarus
##                                                   3
##                                             Belgium
##                                                   2
##                                              Belize
##                                                   2
##                                               Benin
##                                                   1
##                                              Bhutan
##                                                   1
##                                 Bosnia and Herzegovina
##                                                   3
##                             Bouvet Island (Bouvetoya)
##                                                   2
##                                              Brazil
##                                                   3
## British Indian Ocean Territory (Chagos Archipelago)
##                                                   1
##                                 British Virgin Islands
##                                                   1
##                                      Brunei Darussalam
##                                                   2
##                                             Bulgaria
##                                                   4
##                                          Burkina Faso
##                                                   1
##                                               Burundi
##                                                   2
##                                              Cambodia
##                                                   2
```

```
##                                                 Canada
##                                                      3
##                                           Cayman Islands
##                                                      3
##                                  Central African Republic
##                                                      1
##                                                   Chad
##                                                      2
##                                                  Chile
##                                                      3
##                                                  China
##                                                      4
##                                         Christmas Island
##                                                      4
##                                                Colombia
##                                                      1
##                                                 Comoros
##                                                      1
##                                                   Congo
##                                                      3
##                                              Cook Islands
##                                                      1
##                                                Costa Rica
##                                                      2
##                                             Cote d'Ivoire
##                                                      3
##                                                    Cuba
##                                                      4
##                                                  Cyprus
##                                                      4
##                                             Czech Republic
##                                                      4
##                                                 Denmark
##                                                      2
##                                                Djibouti
##                                                      1
##                                                Dominica
##                                                      2
##                                      Dominican Republic
##                                                      2
##                                                 Ecuador
##                                                      2
##                                                   Egypt
##                                                      3
##                                              El Salvador
##                                                      3
##                                       Equatorial Guinea
##                                                      3
##                                                 Eritrea
##                                                      3
```

```
##                                             Estonia
##                                                   1
##                                            Ethiopia
##                                                   7
##                           Falkland Islands (Malvinas)
##                                                   2
##                                       Faroe Islands
##                                                   2
##                                                Fiji
##                                                   3
##                                             Finland
##                                                   1
##                                              France
##                                                   5
##                                       French Guiana
##                                                   3
##                                    French Polynesia
##                                                   1
##                           French Southern Territories
##                                                   1
##                                              Gambia
##                                                   1
##                                             Georgia
##                                                   2
##                                             Germany
##                                                   1
##                                               Ghana
##                                                   2
##                                              Greece
##                                                   3
##                                           Greenland
##                                                   1
##                                             Grenada
##                                                   2
##                                          Guadeloupe
##                                                   1
##                                                Guam
##                                                   2
##                                           Guatemala
##                                                   3
##                                            Guernsey
##                                                   2
##                                              Guinea
##                                                   2
##                                       Guinea-Bissau
##                                                   1
##                                              Guyana
##                                                   3
##                                               Haiti
##                                                   1
```

```
##                     Heard Island and McDonald Islands
##                                                     2
##                         Holy See (Vatican City State)
##                                                     1
##                                               Honduras
##                                                     2
##                                              Hong Kong
##                                                     4
##                                                Hungary
##                                                     5
##                                                Iceland
##                                                     1
##                                              Indonesia
##                                                     4
##                                                   Iran
##                                                     3
##                                                Ireland
##                                                     1
##                                              Isle of Man
##                                                     1
##                                                 Israel
##                                                     2
##                                                  Italy
##                                                     1
##                                                Jamaica
##                                                     2
##                                                  Japan
##                                                     2
##                                                 Jersey
##                                                     3
##                                             Kazakhstan
##                                                     2
##                                                  Kenya
##                                                     4
##                                               Kiribati
##                                                     1
##                                                  Korea
##                                                     3
##                                                 Kuwait
##                                                     1
##                                          Kyrgyz Republic
##                                                     1
##                       Lao People's Democratic Republic
##                                                     2
##                                                 Latvia
##                                                     4
##                                                Lebanon
##                                                     3
##                                                Liberia
##                                                     6
```

```
##                                Libyan Arab Jamahiriya
##                                                     2
##                                         Liechtenstein
##                                                     6
##                                             Lithuania
##                                                     3
##                                            Luxembourg
##                                                     2
##                                                 Macao
##                                                     3
##                                              Macedonia
##                                                     1
##                                            Madagascar
##                                                     2
##                                                Malawi
##                                                     2
##                                              Maldives
##                                                     2
##                                                  Mali
##                                                     1
##                                                 Malta
##                                                     3
##                                       Marshall Islands
##                                                     1
##                                             Martinique
##                                                     3
##                                            Mauritania
##                                                     1
##                                             Mauritius
##                                                     1
##                                               Mayotte
##                                                     5
##                                                Mexico
##                                                     4
##                                            Micronesia
##                                                     4
##                                               Moldova
##                                                     2
##                                                Monaco
##                                                     1
##                                              Mongolia
##                                                     4
##                                            Montenegro
##                                                     2
##                                            Montserrat
##                                                     1
##                                               Morocco
##                                                     1
##                                               Myanmar
##                                                     1
```

```
##                                          Namibia
##                                                1
##                                            Nauru
##                                                1
##                                      Netherlands
##                                                3
##                           Netherlands Antilles
##                                                2
##                                  New Caledonia
##                                                2
##                                    New Zealand
##                                                2
##                                          Niger
##                                                2
##                                   Norfolk Island
##                                                2
##                          Northern Mariana Islands
##                                                2
##                                         Norway
##                                                1
##                                       Pakistan
##                                                1
##                                          Palau
##                                                2
##                             Palestinian Territory
##                                                2
##                                  Papua New Guinea
##                                                3
##                                       Paraguay
##                                                1
##                                           Peru
##                                                5
##                                    Philippines
##                                                3
##                                  Pitcairn Islands
##                                                1
##                                         Poland
##                                                3
##                                       Portugal
##                                                1
##                                    Puerto Rico
##                                                3
##                                          Qatar
##                                                2
##                                       Romania
##                                                1
##                                  Russian Federation
##                                                1
##                                         Rwanda
##                                                2
```

```
##                                     Saint Barthelemy
##                                                    2
##                                         Saint Helena
##                                                    2
##                                  Saint Kitts and Nevis
##                                                    1
##                                           Saint Lucia
##                                                    1
##                                         Saint Martin
##                                                    2
##                              Saint Pierre and Miquelon
##                                                    3
##                     Saint Vincent and the Grenadines
##                                                    3
##                                               Samoa
##                                                    4
##                                           San Marino
##                                                    1
##                                Sao Tome and Principe
##                                                    2
##                                        Saudi Arabia
##                                                    3
##                                             Senegal
##                                                    5
##                                              Serbia
##                                                    3
##                                            Seychelles
##                                                    1
##                                        Sierra Leone
##                                                    2
##                                           Singapore
##                                                    1
##                                            Slovenia
##                                                    1
##                                             Somalia
##                                                    2
##                                        South Africa
##                                                    6
##        South Georgia and the South Sandwich Islands
##                                                    1
##                                               Spain
##                                                    3
##                                            Suriname
##                                                    1
##                         Svalbard & Jan Mayen Islands
##                                                    4
##                                              Sweden
##                                                    1
##                                         Switzerland
##                                                    3
```

```
##                                 Syrian Arab Republic
##                                                    1
##                                               Taiwan
##                                                    4
##                                           Tajikistan
##                                                    1
##                                             Tanzania
##                                                    1
##                                             Thailand
##                                                    2
##                                           Timor-Leste
##                                                    1
##                                                 Togo
##                                                    1
##                                              Tokelau
##                                                    3
##                                                Tonga
##                                                    2
##                                  Trinidad and Tobago
##                                                    2
##                                              Tunisia
##                                                    1
##                                               Turkey
##                                                    7
##                                           Turkmenistan
##                                                    2
##                              Turks and Caicos Islands
##                                                    3
##                                               Tuvalu
##                                                    3
##                                               Uganda
##                                                    4
##                                              Ukraine
##                                                    1
##                                 United Arab Emirates
##                                                    3
##                                       United Kingdom
##                                                    2
##                  United States Minor Outlying Islands
##                                                    2
##                              United States of America
##                                                    3
##                         United States Virgin Islands
##                                                    2
##                                              Uruguay
##                                                    1
##                                           Uzbekistan
##                                                    1
##                                              Vanuatu
##                                                    1
```

```
##                                          Venezuela
##                                                  3
##                                            Vietnam
##                                                  2
##                                    Wallis and Futuna
##                                                  1
##                                       Western Sahara
##                                                  4
##                                              Yemen
##                                                  2
##                                             Zambia
##                                                  3
##                                           Zimbabwe
##                                                  4
```

Turkey has the highest number of those people that clicked the ad

```
ss= table(yes$city)

print(max(ss))

## [1] 2

ss

##
##               Adamsbury                Adamside           Alexanderf
urt
##                       1                       1
  1
##           Alexanderview             Aliciatown            Alvaradop
ort
##                       1                       1
  1
##             Alvarezland             Amandafort             Amandaha
ven
##                       1                       1
  1
##         Andersonchester            Andersonfurt           Andrewboro
ugh
##                       1                       1
  1
##              Bernardton              Bethburgh            Blairboro
ugh
##                       1                       1
  1
##             Blevinstown             Boyerberg            Bradleybu
rgh
##                       1                       1
  1
##             Bradleyside              Bradyfurt               Brandil
```

```
and
##                         1                         1
  1
##              Brandonbury              Brandymouth              Brendaches
ter
##                         1                         1
  1
##                Brianfurt                Brianland           Brittanyboro
ugh
##                         1                         1
  1
##                Brownport                Brownton                Brownt
own
##                         1                         1
  1
##              Burgessside              Butlerfort              Cameronb
erg
##                         1                         1
  1
##                Carterland           Catherinefort           Cervantessh
ire
##                         1                         1
  1
##              Chapmanmouth             Charlenetown              Charlesp
ort
##                         1                         1
  1
##             Charlottefort               Chaseshire              Chrismo
uth
##                         1                         1
  1
##           Christinehaven           Christinetown           Christopherp
ort
##                         1                         1
  1
##              Clarkborough               Codyburgh                Coleb
ury
##                         1                         1
  1
##                 Combsstad               Costaburgh              Courtneyf
ort
##                         1                         1
  1
##              Crawfordfurt          Cunninghamhaven              Curtisp
ort
##                         1                         1
  1
##                Danielview               Davidmouth                Davids
ide
##                         1                         1
```

```
  1
##               Davidstad               Davidview           Davilaches
ter
##                       1                       1
  1
##               Davisfurt              Debraburgh             Destinyf
urt
##                       1                       1
  1
##              Dianaville               Duffystad             Dustinmo
uth
##                       1                       1
  1
##            East Anthony            East Barbara        East Breannaf
urt
##                       1                       1
  1
##           East Brettton      East Brittanyville              East D
ana
##                       1                       1
  1
##              East Donna              East Eric           East Ericp
ort
##                       1                       1
  1
##         East Georgeside        East Heatherside             East He
idi
##                       1                       1
  1
##              East Jason          East Jessefort              East J
ohn
##                       1                       1
  1
##          East Kevinbury            East Lindsey            East Maur
een
##                       1                       1
  1
##       East Michaelmouth       East Michelleberg              East M
ike
##                       1                       1
  1
##        East Rachaelfurt         East Rachelview             East Ron
ald
##                       1                       1
  1
##      East Samanthashire            East Sharon             East Sh
awn
##                       1                       1
  1
##            East Stephen            East Tammie         East Tylersh
```

```
ire
##                         1                         1
  1
##        East Vincentstad      East Yvonnechester              Edwardsp
ort
##                         1                         1
  1
##           Elizabethbury           Elizabethport           Elizabeths
tad
##                         1                         1
  1
##           Ericksonmouth                 Erinton            Estradash
ire
##                         1                         1
  1
##              Evansville              Florestown              Fosters
ide
##                         1                         1
  1
##                Frankbury                Frankport             Fraziersh
ire
##                         1                         1
  1
##              Garciamouth              Garciaside              Garciav
iew
##                         1                         1
  1
##                Grahamberg                Greerport              Guzmanl
and
##                         1                         1
  1
##             Hamiltonfort              Hannaport              Hansenl
and
##                         1                         1
  1
##              Hansenmouth           Harperborough          Hartmanches
ter
##                         1                         1
  1
##              Harveyport             Hawkinsbury             Heatherb
erg
##                         1                         1
  1
##             Helenborough            Hendrixmouth               Henryl
and
##                         1                         1
  1
##           Hernandezside          Hernandezville             Hintonp
ort
##                         1                         1
```

```
  1
##               Hobbsbury             Holderville             Hubbardmo
uth
##                       1                       1
  1
##          Huffmanchester              Hughesport             Jacksonbu
rgh
##                       1                       1
  1
##             Jacksonstad              Jacobstad         Jacquelinesh
ire
##                       1                       1
  1
##               Jamesfurt             Jamesmouth             Jeffreybu
rgh
##                       1                       1
  1
##            Jeffreymouth           Jenniferhaven           Jensenboro
ugh
##                       1                       1
  1
##               Jensenton             Jeremybury             Jessicaha
ven
##                       1                       1
  1
##            Jessicashire             Jessicastad               Joeches
ter
##                       1                       1
  1
##             Johnsontown             Johnsonview           Johnstonmo
uth
##                       1                       1
  1
##            Jonathanland            Jonathantown               Jonessh
ire
##                       1                       1
  1
##                Joneston             Jordanshire               Jordant
own
##                       1                       1
  1
##              Josephberg             Josephmouth               Josephs
tad
##                       1                       1
  1
##              Julietown               Katieport                Keitht
own
##                       1                       1
  1
##               Kentmouth               Kevinberg           Kimberlymo
```

```
uth
##                       1                       1
  1
##             Kingchester               Klineside             Kristinf
urt
##                       1                       1
  1
##             Kristintown             Kyleborough         Lake Allenvi
lle
##                       1                       1
  1
##             Lake Amanda         Lake Beckyburgh        Lake Brandonv
iew
##                       1                       1
  1
##      Lake Cassandraport      Lake Charlottestad    Lake Christopherf
urt
##                       1                       1
  1
##         Lake Conniefurt          Lake Craigview              Lake Da
vid
##                       1                       1
  2
##             Lake Dustin             Lake Edward           Lake Evant
own
##                       1                       1
  1
##              Lake Faith             Lake Gerald               Lake
Ian
##                       1                       1
  1
##              Lake James           Lake Jennifer            Lake Jess
ica
##                       2                       1
  1
##       Lake Jessicaville             Lake Jesus               Lake J
ohn
##                       1                       1
  1
##           Lake Johnbury              Lake Jose         Lake Joshuaf
urt
##                       1                       1
  1
##            Lake Matthew           Lake Michelle       Lake Michelleb
ury
##                       1                       1
  1
##        Lake Rhondaburgh     Lake Stephenborough             Lake Su
san
##                       1                       1
```

```
  1
##              Lake Tracy            Lake Vanessa             Lawsonsh
ire
##                       1                       1
  1
##                Leahside              Lesliebury              Lewismo
uth
##                       1                       1
  1
##                Lisamouth              Lopezberg              Lorivi
lle
##                       2                       1
  1
##                Lovemouth             Mariahview              Markha
ven
##                       1                       1
  1
##             Masseyshire             Mauricefurt           Meghanches
ter
##                       1                       1
  1
##              Melanieton          Melissachester             Meyerss
tad
##                       1                       1
  1
##                 Mezaton            Michaelshire             Michelet
own
##                       1                       1
  1
##             Michellefort            Michelleside             Millerb
ury
##                       1                       2
  2
##            Millerchester              Millerside             Millert
own
##                       1                       1
  1
##              Monicaview             Morganport             Morrismo
uth
##                       1                       1
  1
##              Nelsonfurt              New Amanda           New Angelv
iew
##                       1                       1
  1
##           New Brendafurt      New Charleschester       New Christinat
own
##                       1                       1
  1
##         New Daniellefort             New Darlene          New Debbies
```

```
tad
##                         1                         1
  1
##          New Denisebury               New Henry                 New
Jay
##                         1                         1
  1
##          New Joshuaport          New Julianberg           New Karenb
erg
##                         1                         1
  1
##          New Keithburgh           New Lindaberg           New Lucasbu
rgh
##                         1                         1
  1
##          New Marcusbury             New Matthew             New Mich
ael
##                         1                         1
  1
##               New Nancy             New Patrick              New Rac
hel
##                         1                         1
  1
##             New Rebecca             New Sabrina              New Ta
mmy
##                         1                         1
  1
##              New Teresa             New Theresa              New Tho
mas
##                         1                         1
  1
##             New Timothy               New Tina          New Travist
own
##                         1                         1
  1
##        New Williammouth           Nicholasland        North Aaronbu
rgh
##                         1                         1
  1
##      North Aaronchester           North Andrew        North Andrews
tad
##                         1                         1
  1
##        North Angelastad        North Angelatown             North Ap
ril
##                         1                         1
  1
##     North Brittanyburgh           North Cassie       North Charlesb
ury
##                         1                         1
```

```
  1
##             North Daniel        North Debrashire        North Derekvi
lle
##                        1                       1
  1
##            North Destiny     North Jenniferburgh      North Jessicavi
lle
##                        1                       1
  1
##          North Johntown          North Jonathan             North Ka
tie
##                        1                       1
  1
##         North Kevinside          North Kimberly         North Laural
and
##                        1                       1
  1
##              North Mark          North Maryland          North Merce
des
##                        1                       1
  1
##            North Michael            North Regina       North Ricardot
own
##                        1                       1
  1
##      North Richardburgh    North Russellborough          North Saman
tha
##                        1                       1
  1
##         North Sarashire          North Virginia               Olsons
ide
##                        1                       1
  1
##               Olsonstad             Palmerside             Pattymo
uth
##                        1                       1
  1
##                Penatown             Perryburgh            Petersonf
urt
##                        1                       1
  1
##              Philipberg            Phillipsbury        Port Angelamo
uth
##                        1                       1
  1
##         Port Aprilville              Port Beth             Port Bl
ake
##                        1                       1
  1
##              Port Brenda             Port Brian         Port Brookel
```

```
and
##                         1                         1
  1
##             Port Cassie          Port Christina        Port Christop
her
##                         1                         1
  1
## Port Christopherborough            Port Crystal             Port Den
nis
##                         1                         1
  1
##          Port Derekberg     Port Douglasborough               Port E
ric
##                         1                         1
  1
##          Port Erikhaven           Port Erinberg         Port Georgeb
ury
##                         1                         1
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##              Port Jason        Port Jefferybury            Port Jenni
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##            Port Jessica         Port Joshuafort               Port J
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##              Port Julie        Port Katelynview       Port Kathleenf
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##           Port Lawrence        Port Melissaberg       Port Michaelmo
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##       Port Michealburgh           Port Mitchell         Port Patrick
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##           Port Paultown             Port Rachel         Port Sarahha
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##         Port Sarahshire         Port Sherrystad             Pottermo
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##            Ramirezhaven            Ramirezside            Rebeccamo
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##             Reginamouth            Reneechester             Richardsh
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##          Richardsonland         Richardsonshire               Rivasl
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##              Robertfurt              Robertside          Robertsonbu
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##                       2                       1
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##             Robertstown             Roberttown             Robinsont
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##                       1                       1
  1
##               Rochabury             Rogerburgh              Ronaldp
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##             Ronniemouth            Russellville              Ryanha
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##             Salazarbury            Samanthaland             Sandrash
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##                       1                       1
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##               Sarahland             Shelbyport               Silva
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##               Smithside            South Aaron             South A
dam
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##     South Alexisborough         South Cathyfurt      South Cynthiash
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##            South Daniel        South Davidhaven        South Davidmo
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##            South George             South Henry        South Jackieb
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##              South Jade       South Jasminebury        South Jeannep
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##            South Jessica              South John       South Johnnymo
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##               South Kyle          South Lauraton          South Laurat
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##               South Lisa          South Margaret              South M
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##             South Meghan             South Peter            South Rebe
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##         South Tiffanyton    South Vincentchester             South Wal
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##                         1                         1
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##               Tammyshire             Taylorhaven             Taylormo
uth
##                         1                         1
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##              Timothyfurt            Timothymouth             Timothyp
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##                  Tinaton              Tracyhaven           Turnerches
ter
##                         1                         1
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##                Tylerport             Vanessastad             Vanessav
iew
##                         1                         1
  1
##               Waltertown              Welchshire              Wendyvi
lle
##                         1                         1
  1
##              West Amanda           West Annefort          West Aprilp
ort
##                         2                         1
```

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##               West Brad         West Brandonton              West Ca
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##                       1                       1
  1
##       West Chloeborough        West Christopher             West Con
nor
##                       1                       1
  1
##              West David         West Derekmouth          West Dylanb
erg
##                       1                       1
  1
##        West Eduardotown          West Ericaport           West Ericf
urt
##                       1                       1
  1
##     West Gabriellamouth             West James              West J
ane
##                       1                       1
  1
##         West Jeremyside       West Jessicahaven             West Ju
lia
##                       1                       1
  1
##             West Justin         West Katiefurt          West Kevinf
urt
##                       1                       1
  1
##            West Leahton        West Lindseybury        West Melanief
urt
##                       1                       1
  1
##       West Melissashire            West Pamela             West Ra
ndy
##                       1                       1
  1
##       West Raymondmouth           West Ricardo            West Rich
ard
##                       1                       1
  1
##               West Ryan           West Shannon             West Ta
nya
##                       1                       2
  1
##          West Tinashire        West Travismouth            West Will
iam
##                       1                       1
  1
##               Westshire              Whiteport             Wilcoxp
```

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ort
##                         1                         1
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##            Williammouth         Williamsborough            Williamsf
ort
##                         1                         1
  1
##           Williamsmouth            Williamsport             Williams
tad
##                         1                         2
  1
##              Wrightview               Yangside               Youngf
ort
##                         1                         1
  1
##                   Yuton             Zacharyton
##                         1                         1
```

Lisamouth, Michelleside, Millerbury, Robertfurt, South Lisa, West Shannon and Williamsport cities had the most people that viewed the ad

Pearson correlation and coefficient tests

```
install.packages("ggpubr", repos = "http://cran.us.r-project.org")
```

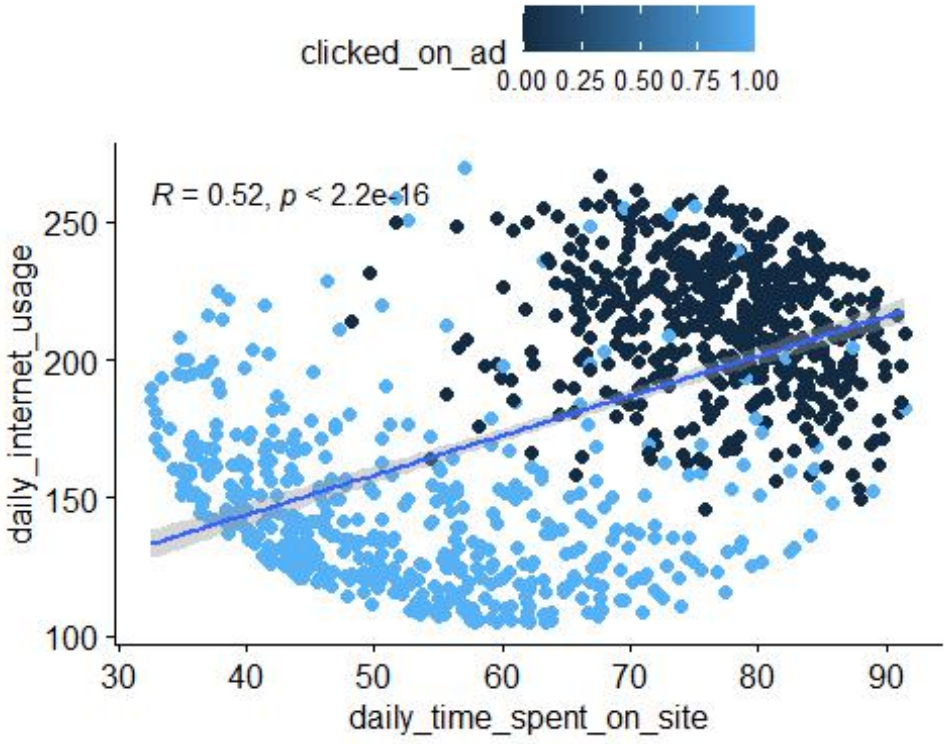
```
## Installing package into 'C:/Users/Lenovo/AppData/Local/R/win-library
/4.2'
## (as 'lib' is unspecified)
```

```
## package 'ggpubr' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\Lenovo\AppData\Local\Temp\RtmpQd0pH6\downloaded_packages
```

```
library("ggpubr")
```

```
ggscatter(advert1, x = "daily_time_spent_on_site", y = "daily_internet_
usage",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xlab = "daily_time_spent_on_site", ylab = "daily_internet_usa
ge",  color = "clicked_on_ad")
```

```
## `geom_smooth()` using formula 'y ~ x'
```




```
res <- cor.test(advert1$daily_internet_usage, advert1$daily_time_spent_
on_site,
                    method = "pearson")
res # Testing the significance of the Pearson correlation coefficients
of daily internet usage and time_spent_on_site

##
##  Pearson's product-moment correlation
##
## data:  advert1$daily_internet_usage and advert1$daily_time_spent_on_
site
## t = 19.141, df = 990, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.4727739 0.5637294
## sample estimates:
##       cor
## 0.5197228
```

The p-value of the test is 2.2e-16, which is less than the significance level alpha = 0.05. We can conclude that daily_internet_usage and daily_time_spent_on_site are significantly correlated with a correlation coefficient of 0.5197228 and p-value of 2.2e-16.

Individuals most likely to click on her ads

- Are females

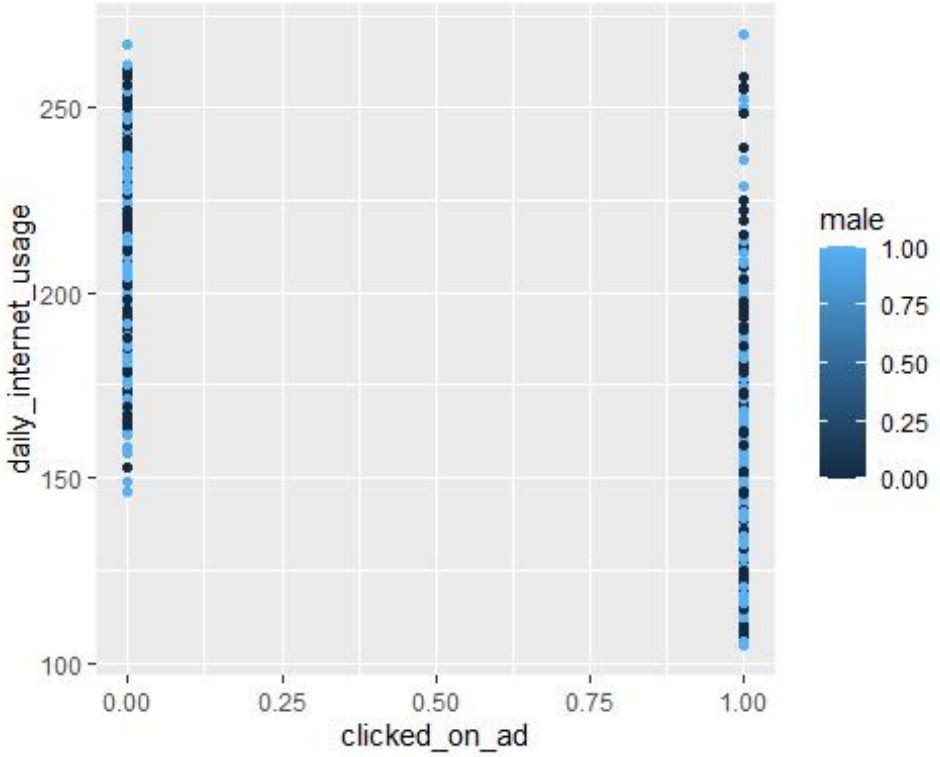
- Live in Turkey or Lisamouth, Michelleside, Millerbury, Robertfurt, South Lisa, West Shannon and Williamsport cities
- are around the ages of 30-40
- daily time on site is 35-50,
- has a daily internet usage of 100-150
- has an area income of 40000-55000
- has an average daily internet time spent of 53
- has an average daily internet usage of 144.9

There is a positive relationship between daily_internet_usage and daily_spent_time

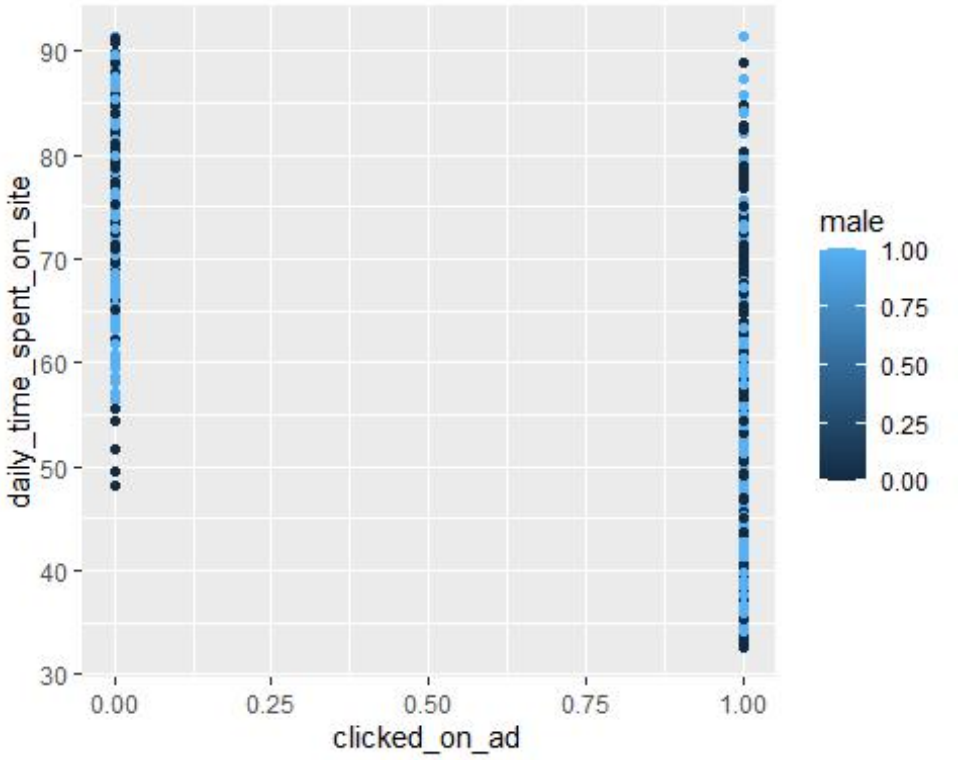
Most people who spend the lowest to moderate time on site and have th

Challenging the Solution

```
#Checking how people clicked the ad depending on their daily internet u
sage while showing their gender
ggplot(data = advert1) +
  geom_point(mapping = aes(x = clicked_on_ad, y = daily_internet_usage,
 color = male))
```



```
#Checking how people clicked the ad depending on their daily_time_spent
_on_site while showing their gender
ggplot(data = advert1) +
  geom_point(mapping = aes(x = clicked_on_ad, y = daily_time_spent_on_s
ite, color = male))
```



Use classifier models such as random forest classifier, Gradient Boosting Classifier, Decision Tree Classifier, naive bayes, XGB Classifier, and Logistic Regression to best predict those that clicked on the ad

Follow up Questions

Did we have the right question?

yes, the research question was clear and specific.

Did we have the right data?

Yes, the data was relevant to the project. The dataset was also large enough for us to draw some answers.

Do we need other data to answer the research question?

Not necessarily.