InstagramFollowers_FinalProject

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08/13/2022

Introduction:

Social media is an important arm of the current internet world. Social media not just provides content and entertainment but also has become a good source of income and popularity.

With the datasets available from Kaggle, I have processed the data to show which category has is trending per country.

Problem statement addressed:

To find a top successful categories of the social media (Instagram) handle per country, which can be used as suggestion to start a new instagram handle which will be successful and profitable.

Approach:

1. Data Collection
2. Merging different datasets
3. Data Cleansing
4. Data plotting using following plots:
    - Scatter plot
    - Histogram

How your approach addresses (fully or partially) the problem:

I will be providing a prediction on which category should a person be starting a social media IInstagram) channel in a country of his liking depending on the data provided.

Analysis:

Importing and Cleaning Data:

Instagram Categories Dataset importing:

```
insta_categories <- read.csv('/Users/somashekarvayuvegula/Documents/Workspace/dsc520/completed/Final_Pr
head(insta_categories)
```

```
##        Username    Main.Category Main.video.category
## 1     cristiano           Sports              Sports
## 2   kyliejenner Fashion & Beauty    Fashion & Beauty
## 3      leomessi           Sports              Sports
## 4   selenagomez    Entertainment               Music
## 5       therock
## 6 kimkardashian Fashion & Beauty    Fashion & Beauty
```

```
head(insta_categories$Main.Category)
```

```
## [1] "Sports"           "Fashion & Beauty" "Sports"           "Entertainment"
## [5] ""                 "Fashion & Beauty"
```

Instagrammers Details Dataset importing

```
insta_details <- read.csv('/Users/somashekarvayuvegula/Documents/Workspace/dsc520/completed/Final_Proje
head(insta_details)
```

```
##        Username  Channel.Name Country                                    Url
## 1     cristiano     cristiano      ES     https://www.instagram.com/cristiano
## 2   kyliejenner   kyliejenner      US   https://www.instagram.com/kyliejenner
## 3      leomessi      leomessi      AR      https://www.instagram.com/leomessi
## 4   selenagomez   selenagomez      US   https://www.instagram.com/selenagomez
## 5       therock       therock      US       https://www.instagram.com/therock
## 6 kimkardashian kimkardashian      US https://www.instagram.com/kimkardashian
```

Instagram Followers and Likes Dataset importing

```
insta_followers <- read.csv('/Users/somashekarvayuvegula/Documents/Workspace/dsc520/completed/Final_Pro

head(insta_followers)
```

```
##        Username       Likes Posts Followers Boost.Index Comments.Avg.
## 1     cristiano 22876451727  3328 465027234          92     51758.331
## 2   kyliejenner 43048545079  6921 356687629          91     47534.121
## 3      leomessi  4670492197   875 347032978          90     47044.540
## 4   selenagomez  8442642603  1835 334551681          93     39167.116
## 5       therock  9562231242  6660 327064138          91      8529.747
## 6 kimkardashian 14920061391  5603 323090977          91     16964.807
##   Views.Avg. Avg..1.Day Avg..3.Day Avg..7.Day Avg..14.Day Avg..30.Day
## 1   17009494         NA         NA    3321113     5327340     6948659
## 2   22875473         NA         NA    1223002     2196528     4692459
## 3   11761596         NA    4810554    3199807     5359469     5668454
## 4   10723973         NA         NA         NA     2340219     2340219
## 5    5413831         NA         NA     713970     1101339     1165227
## 6    9642516         NA    2583151    2699978     2704005     2586789
##   Engagement.Rate Engagement.Rate..60.Days.
```

```
## 1     0.014915592               0.015903093
## 2     0.017617215               0.016188635
## 3     0.015533562               0.019045021
## 4     0.013912687               0.007719662
## 5     0.004425938               0.003722545
## 6     0.008303645               0.009688863
```

Removing unwanted columns

```
insta_followers <- subset (insta_followers, select = -c(Comments.Avg.,Views.Avg.,Avg..1.Day,Avg..3.Day,A

head(insta_followers)
```

```
##        Username       Likes Posts Followers Boost.Index
## 1     cristiano 22876451727  3328 465027234          92
## 2   kyliejenner 43048545079  6921 356687629          91
## 3      leomessi  4670492197   875 347032978          90
## 4   selenagomez  8442642603  1835 334551681          93
## 5       therock  9562231242  6660 327064138          91
## 6 kimkardashian 14920061391  5603 323090977          91
```

Instagram Followers and Likes Dataset importing

```
library("readxl")
country_names <- read.csv('/Users/somashekarvayuvegula/Documents/Workspace/dsc520/completed/Final_Proje
head(country_names)
```

```
##   Alpha.2.code Alpha.3.code English.short.name.lower.case Numeric.code
## 1           AD          ASM                        Andorra           16
## 2           AE          UAE          United Arab Emirates          804
## 3           AF          ALA                   Afghanistan          248
## 4           AG          ATA           Antigua and Barbuda           10
## 5           AI          AGO                      Anguilla           24
## 6           AL          AFG                       Albania            4
##      ISO.3166.2
## 1 ISO 3166-2:AS
## 2 ISO 3166-2:UA
## 3 ISO 3166-2:AX
## 4 ISO 3166-2:AQ
## 5 ISO 3166-2:AO
## 6 ISO 3166-2:AF
```

Final Dataset:

Merging all the datasets

```
df_details_combined <- merge(insta_categories,insta_details,by.x="Username",by.y="Username")
df_followers_combined <-merge(df_details_combined,insta_followers,by.x="Username",by.y="Username")
df_final <-merge(df_followers_combined,country_names[ , c("Alpha.2.code", "English.short.name.lower.case

names(df_final)[names(df_final)=="English.short.name.lower.case"] <- "Country.name"
names(df_final)[names(df_final)=="Main.video.category"] <- "Sub.category"
head(df_final)
```

```
##   Country       Username    Main.Category     Sub.category   Channel.Name
## 1      AE        nusr_et                                          nusr_et
## 2      AI     norafatehi    Entertainment           Movies     norafatehi
## 3      AR    georginagio Fashion & Beauty Fashion & Beauty    georginagio
## 4      AR       leomessi           Sports           Sports       leomessi
## 5      AR    paulodybala           Sports           Sports    paulodybala
## 6      AU chrishemsworth    Entertainment           Movies chrishemsworth
##                                      Url      Likes Posts Followers
## 1        https://www.instagram.com/nusr_et 1358263112  2302  46891641
## 2     https://www.instagram.com/norafatehi 1660332211  1682  41161527
## 3    https://www.instagram.com/georginagio 1323180384   726  39025459
## 4       https://www.instagram.com/leomessi 4670492197   875 347032978
## 5    https://www.instagram.com/paulodybala 1843671992  1263  47720068
## 6 https://www.instagram.com/chrishemsworth 1731131414   859  55165178
##   Boost.Index         Country.name
## 1          81 United Arab Emirates
## 2          83             Anguilla
## 3          74            Argentina
## 4          90            Argentina
## 5          85            Argentina
## 6          86            Australia
```

Removing the rows for which followers, likes,username, main category, sub category country name are blank

```
df_final <- df_final[!(df_final$Username == "" | df_final$Main.Category == ""| df_final$Sub.category ==

head(df_final)
```

```
##   Country       Username    Main.Category     Sub.category   Channel.Name
## 2      AI     norafatehi    Entertainment           Movies     norafatehi
## 3      AR    georginagio Fashion & Beauty Fashion & Beauty    georginagio
## 4      AR       leomessi           Sports           Sports       leomessi
## 5      AR    paulodybala           Sports           Sports    paulodybala
## 6      AU chrishemsworth    Entertainment           Movies chrishemsworth
## 7      BB     badgalriri    Entertainment            Music     badgalriri
```

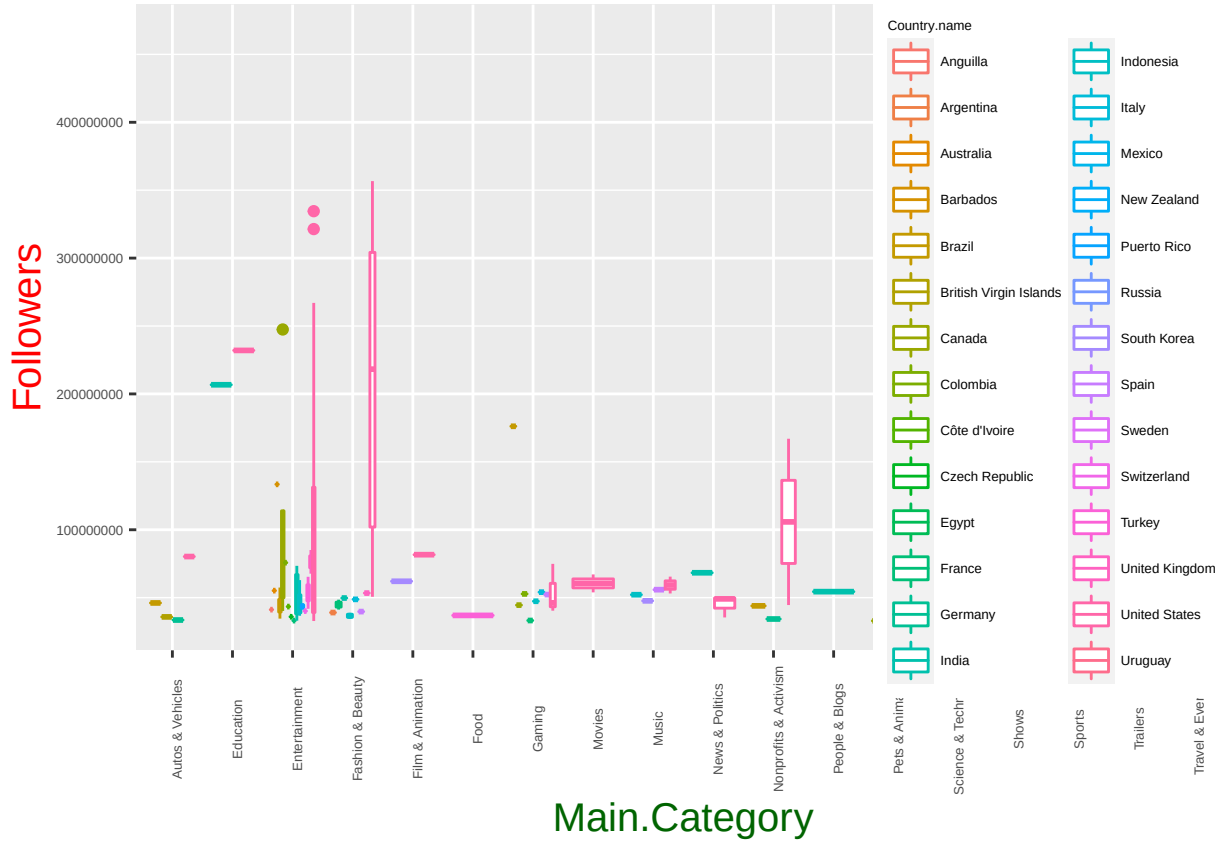
```
##                                       Url       Likes Posts Followers
## 2     https://www.instagram.com/norafatehi  1660332211  1682  41161527
## 3    https://www.instagram.com/georginagio  1323180384   726  39025459
## 4       https://www.instagram.com/leomessi  4670492197   875 347032978
## 5    https://www.instagram.com/paulodybala  1843671992  1263  47720068
## 6 https://www.instagram.com/chrishemsworth  1731131414   859  55165178
## 7     https://www.instagram.com/badgalriri 13027355720  4837 133436105
##   Boost.Index Country.name
## 2          83     Anguilla
## 3          74    Argentina
## 4          90    Argentina
## 5          85    Argentina
## 6          86    Australia
## 7          88     Barbados
```

Implications :

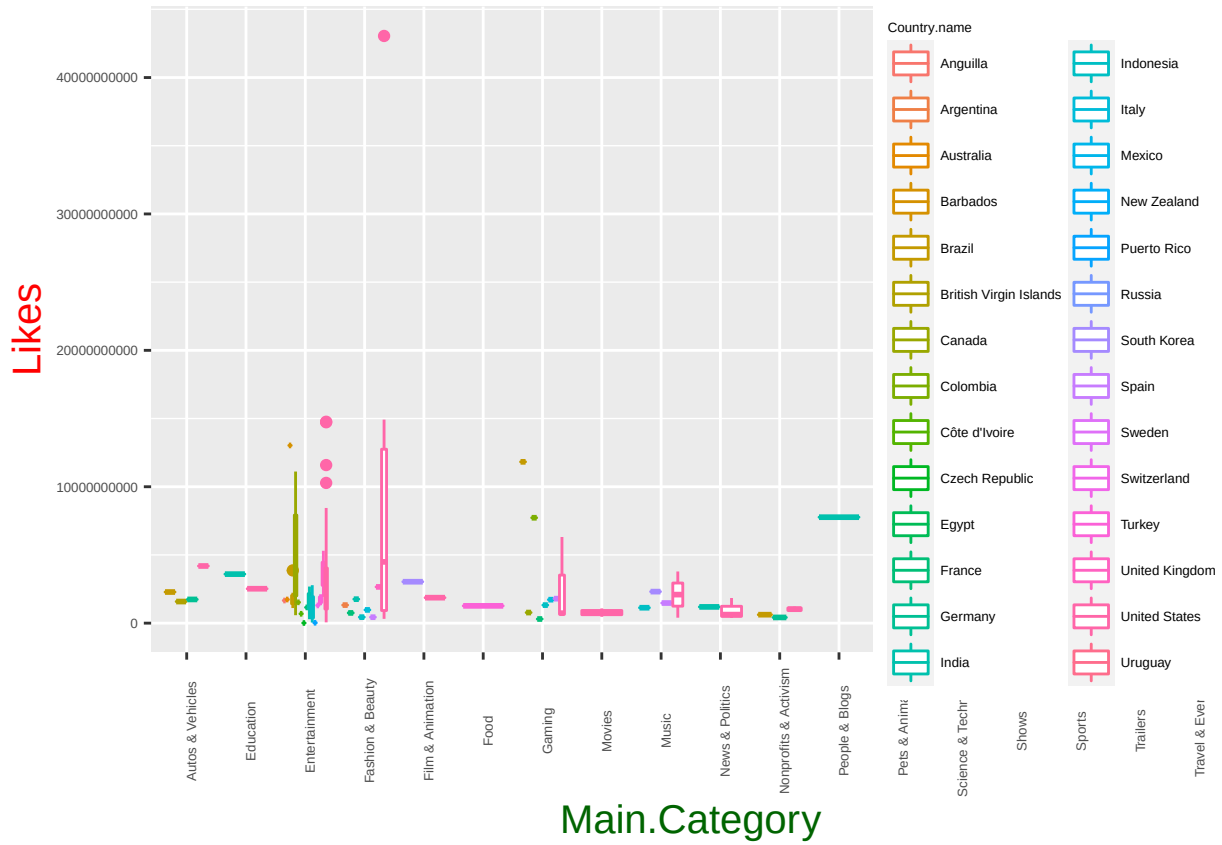
Different plots and tables used to answer the problem statement:

Boxplot:

```
library(ggplot2)
options(scipen = 999)
boxplot<-ggplot(data=df_final,aes(x=Main.Category,y=Followers))+geom_boxplot(aes(colour=Country.name))

boxplot + theme(axis.title.x=element_text(colour="DarkGreen",size = 15),
        axis.title.y = element_text(colour = "Red",size = 15),
        axis.text.x = element_text(size = 5, angle = 90),
        axis.text.y = element_text(size=5),
        legend.title = element_text(size=5),
        legend.text=element_text(size=5),
        legend.position = c(1,1),
        legend.justification = c(1,1))
```

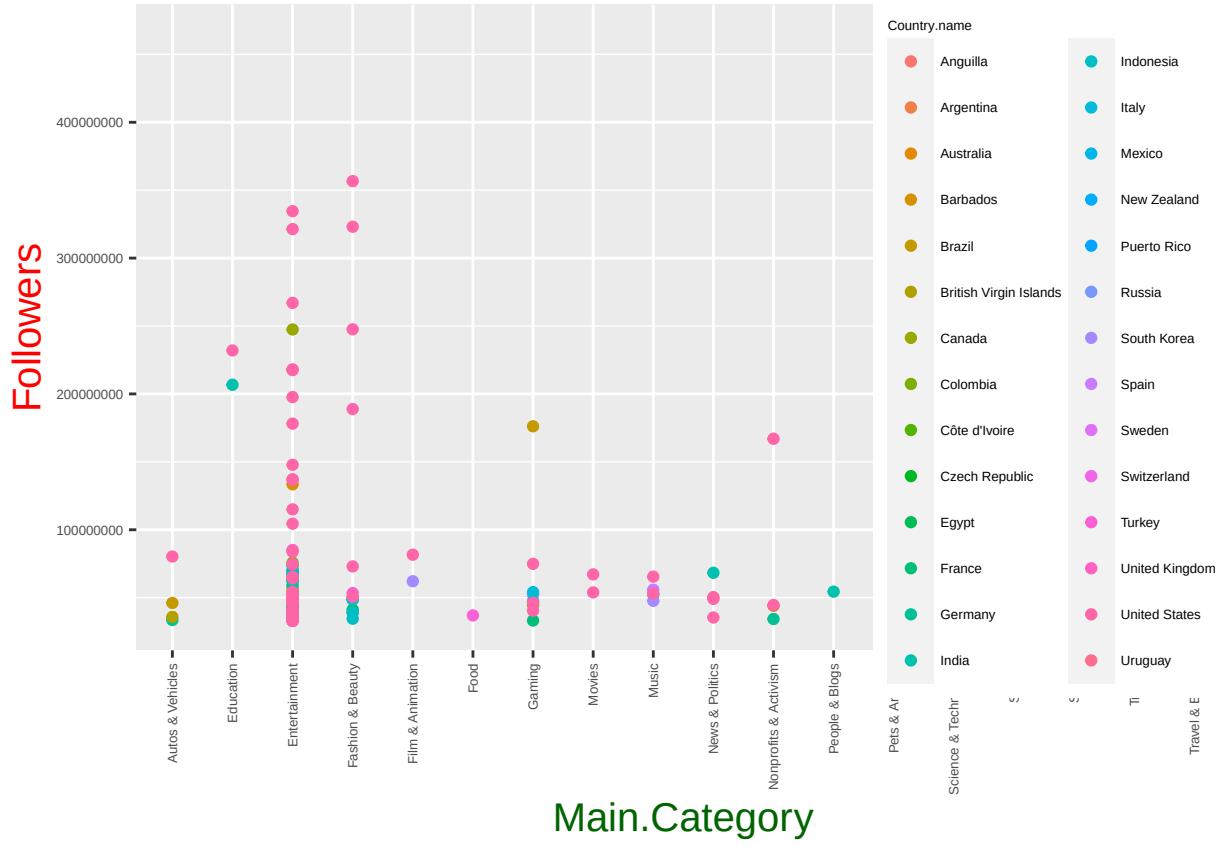



```
options(scipen = 999)
boxplot<-ggplot(data=df_final,aes(x=Main.Category,y=Likes))+geom_boxplot(aes(colour=Country.name))

boxplot + theme(axis.title.x=element_text(colour="DarkGreen",size = 15),
        axis.title.y = element_text(colour = "Red",size = 15),
        axis.text.x = element_text(size = 5, angle = 90),
        axis.text.y = element_text(size=5),
        legend.title = element_text(size=5),
        legend.text=element_text(size=5),
        legend.position = c(1,1),
        legend.justification = c(1,1))
```

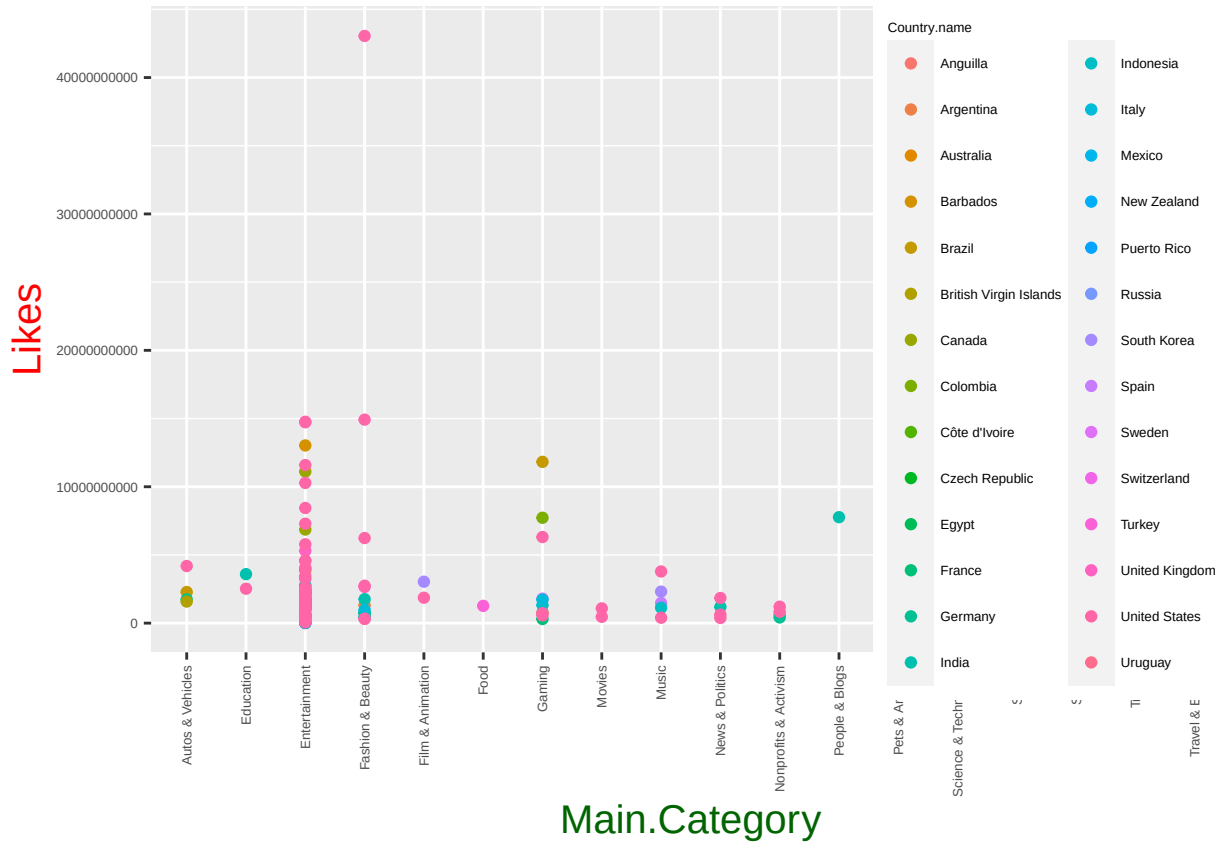


Scatter plot:

```
library(ggplot2)

options(scipen = 999)
scatter_plot <- ggplot(data=df_final,aes(x=Main.Category,y=Followers))+geom_point(aes(colour=Country.nar
  theme(axis.title.x=element_text(colour="DarkGreen",size = 15),
        axis.title.y = element_text(colour = "Red",size = 15),
        axis.text.x = element_text(size=5,angle = 90, vjust = 0.5, hjust=1),
        axis.text.y = element_text(size=5),
        legend.title = element_text(size=5),
        legend.text=element_text(size=5),
        legend.position = c(1,1),
        legend.justification = c(1,1))
scatter_plot
```

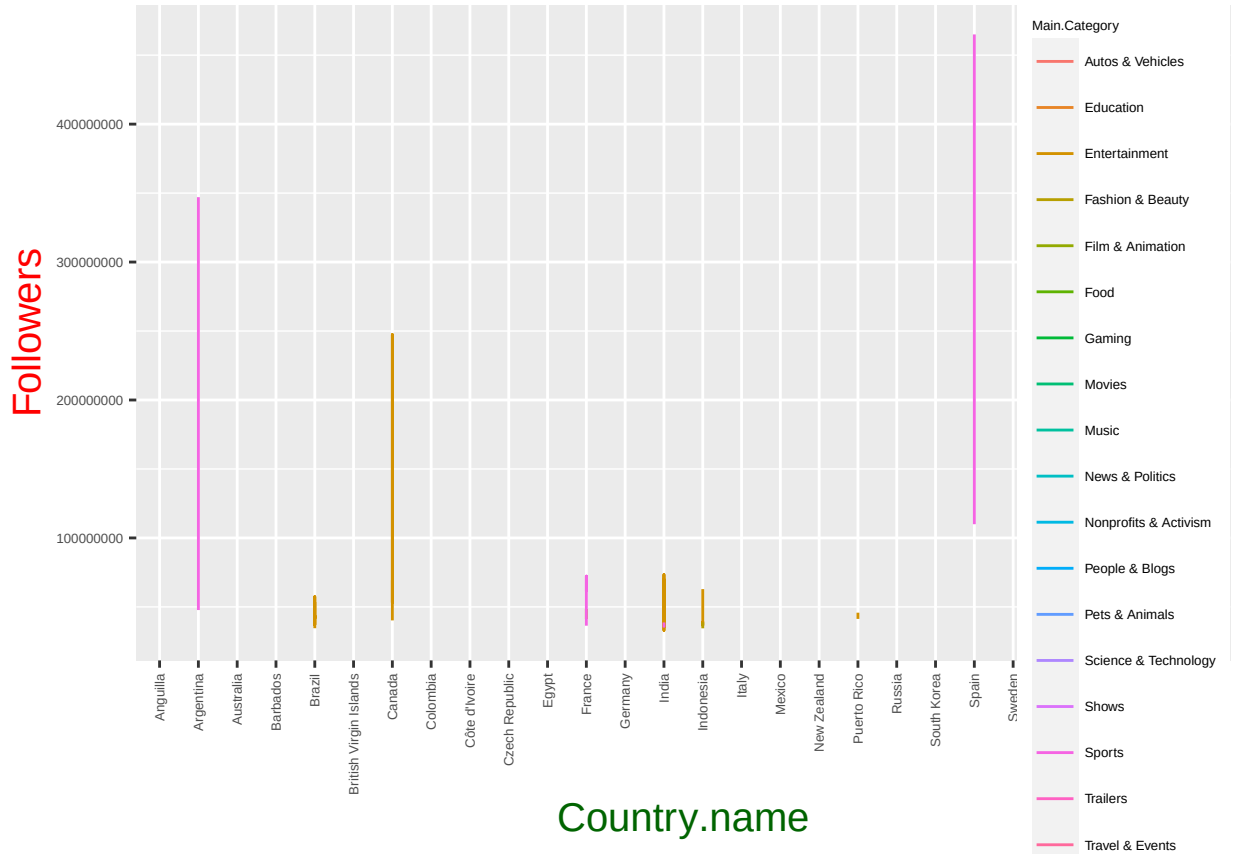



```
options(scipen = 999)
scatter_plot <- ggplot(data=df_final,aes(x=Main.Category,y=Likes))+geom_point(aes(colour=Country.name))+
  theme(axis.title.x=element_text(colour="DarkGreen",size = 15),
        axis.title.y = element_text(colour = "Red",size = 15),
        axis.text.x = element_text(size=5,angle = 90, vjust = 0.5, hjust=1),
        axis.text.y = element_text(size=5),
        legend.title = element_text(size=5),
        legend.text=element_text(size=5),
        legend.position = c(1,1),
        legend.justification = c(1,1))
scatter_plot
```



Trend lines:

```
options(scipen = 999)
trend_line<-ggplot(data=df_final,aes(x=Country.name,y=Followers,colour=Main.Category))+geom_line()

trend_line+theme(axis.title.x=element_text(colour="DarkGreen",size = 15),
        axis.title.y = element_text(colour = "Red",size = 15),
        axis.text.x = element_text(size=5,angle = 90, vjust = 0.5, hjust=1),
        axis.text.y = element_text(size=5),
        legend.title = element_text(size=5),
        legend.text=element_text(size=5),
        legend.position = c(1,1),
        legend.justification = c(1,1))
```




```
options(scipen = 999)
trend_line<-ggplot(data=df_final,aes(x=Country.name,y=Likes,colour=Main.Category))+geom_line()

trend_line+theme(axis.title.x=element_text(colour="DarkGreen",size = 15),
        axis.title.y = element_text(colour = "Red",size = 15),
        axis.text.x = element_text(size=5,angle = 90, vjust = 0.5, hjust=1),
        axis.text.y = element_text(size=5),
        legend.title = element_text(size=5),
        legend.text=element_text(size=5),
        legend.position = c(1,1),
        legend.justification = c(1,1))
```

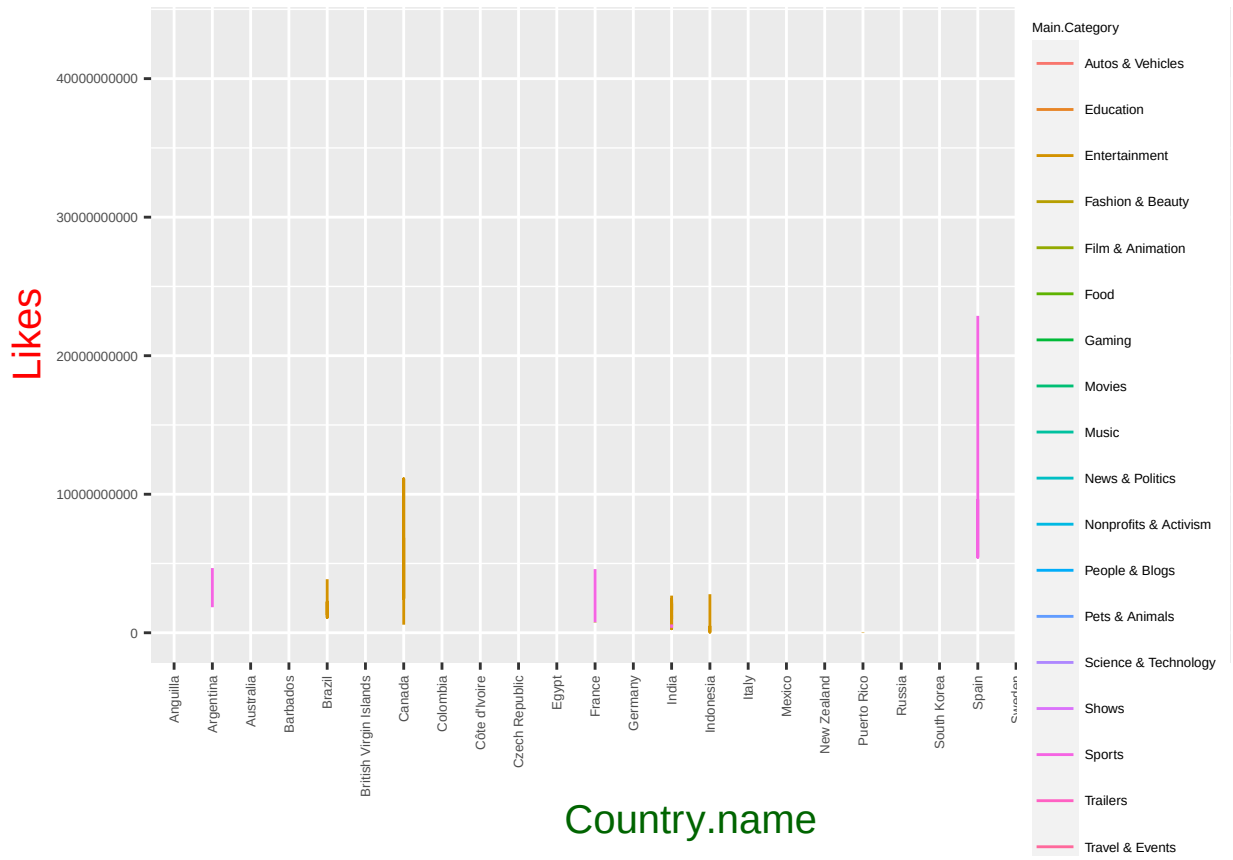


Table with sum and mean of followers based on country and main category:

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
summarise(group_by(df_final, Country.name, Main.Category), sum(Followers), mean(Followers))
```

```
## `summarise()` has grouped output by 'Country.name'. You can override using the
## `.groups` argument.
```

```
## # A tibble: 76 x 4
## # Groups:   Country.name [28]
##    Country.name Main.Category         `sum(Followers)` `mean(Followers)`
##    <chr>        <chr>                            <dbl>             <dbl>
##  1 Anguilla     Entertainment                 41161527          41161527
##  2 Argentina    Fashion & Beauty              39025459          39025459
##  3 Argentina    Sports                       394753046         197376523
##  4 Australia    Entertainment                 55165178          55165178
##  5 Barbados     Entertainment                133436105         133436105
##  6 Brazil       Autos & Vehicles              46091767          46091767
##  7 Brazil       Entertainment                311186018          44455145.
##  8 Brazil       Gaming                       176162107         176162107
##  9 Brazil       Nonprofits & Activism         43950253          43950253
## 10 Brazil       Shows                         34714162          34714162
## # ... with 66 more rows
```

Table with sum and mean of likes based on country and main category:

```
library(dplyr)

summarise(group_by(df_final, Country.name, Main.Category), sum(Likes), mean(Likes))
```

```
## `summarise()` has grouped output by 'Country.name'. You can override using the
## `.groups` argument.
```

```
## # A tibble: 76 x 4
## # Groups:   Country.name [28]
##    Country.name Main.Category         `sum(Likes)` `mean(Likes)`
##    <chr>        <chr>                        <dbl>         <dbl>
##  1 Anguilla     Entertainment           1660332211    1660332211
##  2 Argentina    Fashion & Beauty        1323180384    1323180384
##  3 Argentina    Sports                  6514164189    3257082094.
##  4 Australia    Entertainment           1731131414    1731131414
##  5 Barbados     Entertainment          13027355720   13027355720
##  6 Brazil       Autos & Vehicles        2282083715    2282083715
##  7 Brazil       Entertainment          13609352481    1944193212.
##  8 Brazil       Gaming                 11825612530   11825612530
##  9 Brazil       Nonprofits & Activism    620329319.    620329319.
## 10 Brazil       Shows                   1440246511    1440246511
## # ... with 66 more rows
```

Table with sum and mean of followers and likes based on country and main category:

```
library(dplyr)
```

```
df_final %>%
  group_by(Country.name, Main.Category) %>%
  summarise(sum_followers=format(sum(Followers), scientific=FALSE),
            sum_likes=format(sum(Likes), scientific=FALSE),
            mean_followers=format((mean(Followers)), scientific=FALSE),
            mean_likes=format((mean(Likes)), scientific=FALSE))
```

```
## `summarise()` has grouped output by 'Country.name'. You can override using the
## `.groups` argument.
```

```
## # A tibble: 76 x 6
## # Groups:   Country.name [28]
##    Country.name Main.Category  sum_followers sum_likes mean_followers mean_likes
##    <chr>        <chr>          <chr>         <chr>     <chr>          <chr>
##  1 Anguilla     Entertainment  41161527      16603322~ 41161527       1660332211
##  2 Argentina    Fashion & Bea~ 39025459      13231803~ 39025459       1323180384
##  3 Argentina    Sports         394753046     65141641~ 197376523      3257082094
##  4 Australia    Entertainment  55165178      17311314~ 55165178       1731131414
##  5 Barbados     Entertainment  133436105     13027355~ 133436105      130273557~
##  6 Brazil       Autos & Vehic~ 46091767      22820837~ 46091767       2282083715
##  7 Brazil       Entertainment  311186018     13609352~ 44455145       1944193212
##  8 Brazil       Gaming         176162107     11825612~ 176162107      118256125~
##  9 Brazil       Nonprofits & ~ 43950253      620329319 43950253       620329319
## 10 Brazil       Shows          34714162      14402465~ 34714162       1440246511
## # ... with 66 more rows
```

Filter data based on country to see which category tops the list

Filter the country name based on prediction to be done.

Example: I want to predict and see which category of instagram is successful in India

```
library(dplyr)
df_final %>%
  group_by(Country.name, Main.Category) %>%
  summarise(sum_followers=format(sum(Followers), scientific=FALSE),
            sum_likes=format(sum(Likes), scientific=FALSE),
            mean_followers=format((mean(Followers)), scientific=FALSE),
            mean_likes=format((mean(Likes)), scientific=FALSE)) %>%
  filter(any(Country.name == 'India'))
```

```
## `summarise()` has grouped output by 'Country.name'. You can override using the
## `.groups` argument.
```

```
## # A tibble: 7 x 6
## # Groups:   Country.name [1]
##   Country.name Main.Category   sum_followers sum_likes mean_followers mean_likes
##   <chr>        <chr>           <chr>         <chr>     <chr>          <chr>
```

```
## 1 India        Education       206743723     35924902~ 206743723      3592490225
## 2 India        Entertainment   764462619     21124091~ 54604473       1508863665
## 3 India        Fashion & Beau~ 49721095      17572135~ 49721095       1757213598
## 4 India        News & Politics 68330604      11909760~ 68330604       1190976040
## 5 India        People & Blogs  54422099      77674850~ 54422099       7767485056
## 6 India        Sports          73780559      958397403 36890280       479198702
## 7 India        Trailers        43215034      16087819~ 43215034       1608781966
```

Limitations:

As part of data merging and data cleansing, we have lost some data due to missing fields which are very important for analysis. There is a very high probability that we might have missed some Instagram users or categories or countries, with which our predictions could have been different.

For example, with current analysis, for India, Entertainment is the top category. However, with the missing fields being made available, we could have had some other category like, Education topping the list when the margin of differences between two categories is minimal.

I have tried my best to show the data in the tabular format by filtering on country as that was my goal to see which categories top in a country. However, I was not able to sort based on number of followers or number of likes. I would like to implement sorting to make the results much better.

Conclusion:

As per the analysis, in India, I have found that Entertainment is the category which has more followers. This process can be used to suggest any person (who is willing to start Instagram account and be an Instagrammer) on which field is most viewed, popular and profitable in the country of his choice.