Midterm Project Proposal

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Twitch Data Analysis

Section 1 - Introduction

With the rising popularity in E-sports, and E-sports related multi media, we wanted to do further research that shows why and how this new form of media has taken off. The question that we are going to answer, in broad terms, is what main statistic has the biggest impact on total Followers that a streamer has. We will be classifying a "main statistic" as being Primary Language, Watch Time, Stream time, Average viewers, Views Gained, Twitch Partnered or not, & 18+ Stream or not. We also both enjoy watching e-sports related media, and wish to see what gives these players and streamers the biggest gain in followers.

Section 2 - Data

The data consists of Channel Name, Watch Time, Stream Time, Peak viewers, Average viewers, Followers, Followers gained, Views gained, Partnered, Mature, and Language. The data that we will be focusing on is *Watch Time*, *Stream Time*, *Average viewers*, *Followers*, *Views gained*, *Partnered*, *Mature*, and *Language*. I'll also go ahead and define a few statistics now, just so there is no confusion. Watch time is defined as the total time watched on ones stream(s). Peak Viewers is defined as the maximum amount of viewers one has had on any given stream. Views gained is in based on the amount of views that any given streamer had gained in the last year, as the data set that we are using is based on data of Top 1000 Streamers from past year. Partnered refers to The Twitch Partnership Program, which is for those who are committed to streaming and are ready to level up from Affiliate. When Partnered, you receive monetization benefits, which means that Partners can earn revenue by accepting subscriptions from their viewers. They also can receive virtual currency known as Bits, and they also have the right to play Ads to increase their revenue. [1]

Initial Data Explortation

Peak into the data

```
head(data)
```

```
## # A tibble: 6 x 11
##   channel   watch_time_minutes stream_time_minutes peak_viewers average_viewers
##   <chr>                  <dbl>               <dbl>        <dbl>           <dbl>
## 1 xQcOW             6196161750              215250       222720           27716
## 2 summit1g          6091677300              211845       310998           25610
## 3 Gaules            5644590915              515280       387315           10976
## 4 ESL_CSGO          3970318140              517740       300575            7714
## 5 Tfue              3671000070              123660       285644           29602
## 6 Asmongold         3668799075               82260       263720           42414
```

[1] [Twitch Partner Program Overview. Twitch. Accessed March 19, 2021.] (https://help.twitch.tv/s/article/partner-program-overview?language=en_US#:~:text=The%20Twitch%20Partnership%20Program%20is,anything%20else%20you%20can%20imagine.)

```
## # ... with 6 more variables: followers <dbl>, followers_gained <dbl>,
## #   views_gained <dbl>, partnered <lgl>, mature <lgl>, language <chr>
```

```
summary(data)
```

```
##    channel          watch_time_minutes  stream_time_minutes  peak_viewers
##  Length:1000        Min.   :1.222e+08   Min.   :  3465      Min.   :   496
##  Class :character   1st Qu.:1.632e+08   1st Qu.: 73759      1st Qu.:  9114
##  Mode  :character   Median :2.350e+08   Median :108240      Median : 16676
##                     Mean   :4.184e+08   Mean   :120515      Mean   : 37065
##                     3rd Qu.:4.337e+08   3rd Qu.:141844      3rd Qu.: 37570
##                     Max.   :6.196e+09   Max.   :521445      Max.   :639375
##  average_viewers    followers       followers_gained   views_gained
##  Min.   :   235   Min.   :   3660   Min.   : -15772   Min.   :   175788
##  1st Qu.:  1458   1st Qu.: 170546   1st Qu.:  43758   1st Qu.:  3880602
##  Median :  2425   Median : 318063   Median :  98352   Median :  6456324
##  Mean   :  4781   Mean   : 570054   Mean   : 205519   Mean   : 11668166
##  3rd Qu.:  4786   3rd Qu.: 624332   3rd Qu.: 236131   3rd Qu.: 12196762
##  Max.   :147643   Max.   :8938903   Max.   :3966525   Max.   :670137548
##  partnered         mature          language
##  Mode :logical   Mode :logical   Length:1000
##  FALSE:22        FALSE:770       Class :character
##  TRUE :978       TRUE :230       Mode  :character
##
##
##
```

Visualizations of Data

```
lang_table <- table(data$language)
lang_df <- as.data.frame(lang_table)
top_ten_langauges <- order(lang_df$Freq,decreasing = TRUE)[1:10]
top_ten_langauges <- lang_df[top_ten_langauges,]

library(scales)
```

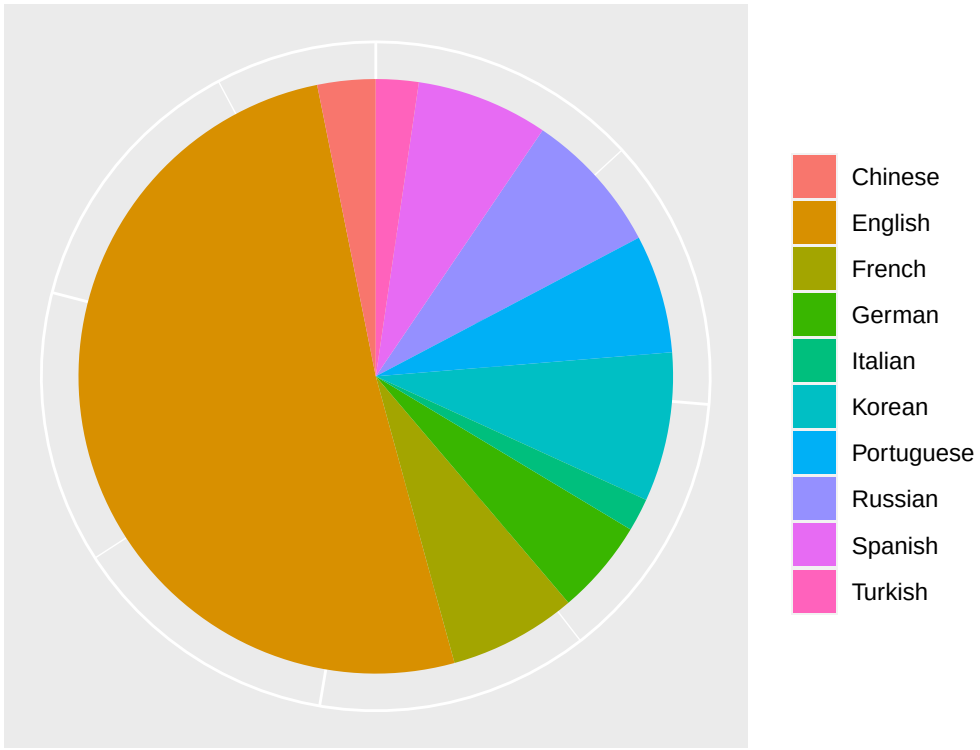
```
##
## Attaching package: 'scales'
```

```
## The following object is masked from 'package:purrr':
##
##     discard
```

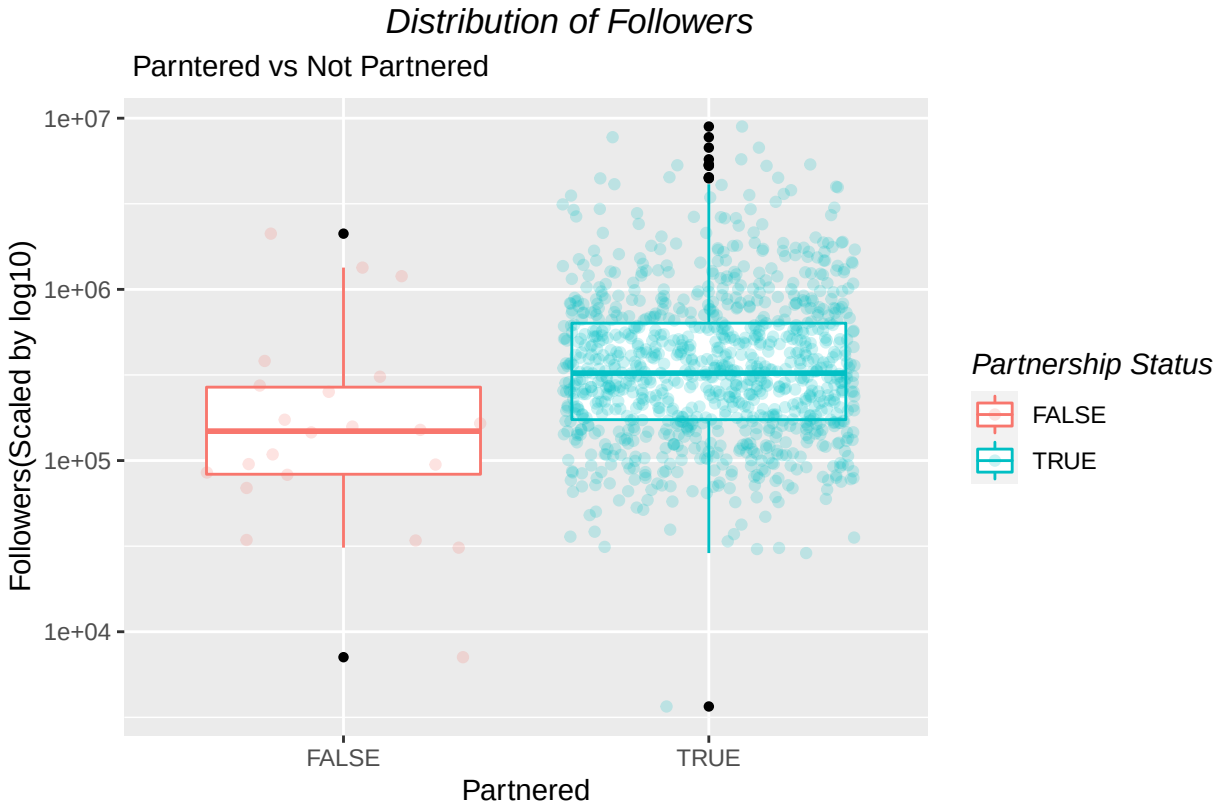
```
## The following object is masked from 'package:readr':
##
##     col_factor
```

```
#Pie Chart of the top10 languages on twitch
ggplot(top_ten_langauges, aes(x = "", y = Freq, fill = Var1))+
  geom_bar(stat = "identity", width = 1)+
  coord_polar("y", start = 0)+
  theme(legend.title = element_blank(),
        axis.title.x = element_blank(),
        axis.title.y = element_blank(),
        axis.ticks.x = element_blank(),
        axis.text.x = element_blank(),
```

```
       axis.ticks.y = element_blank())+
  labs(title = "Top 10 Languages on Twitch",
       caption = "source: https://www.kaggle.com/aayushmishra1512/twitchdata")
```

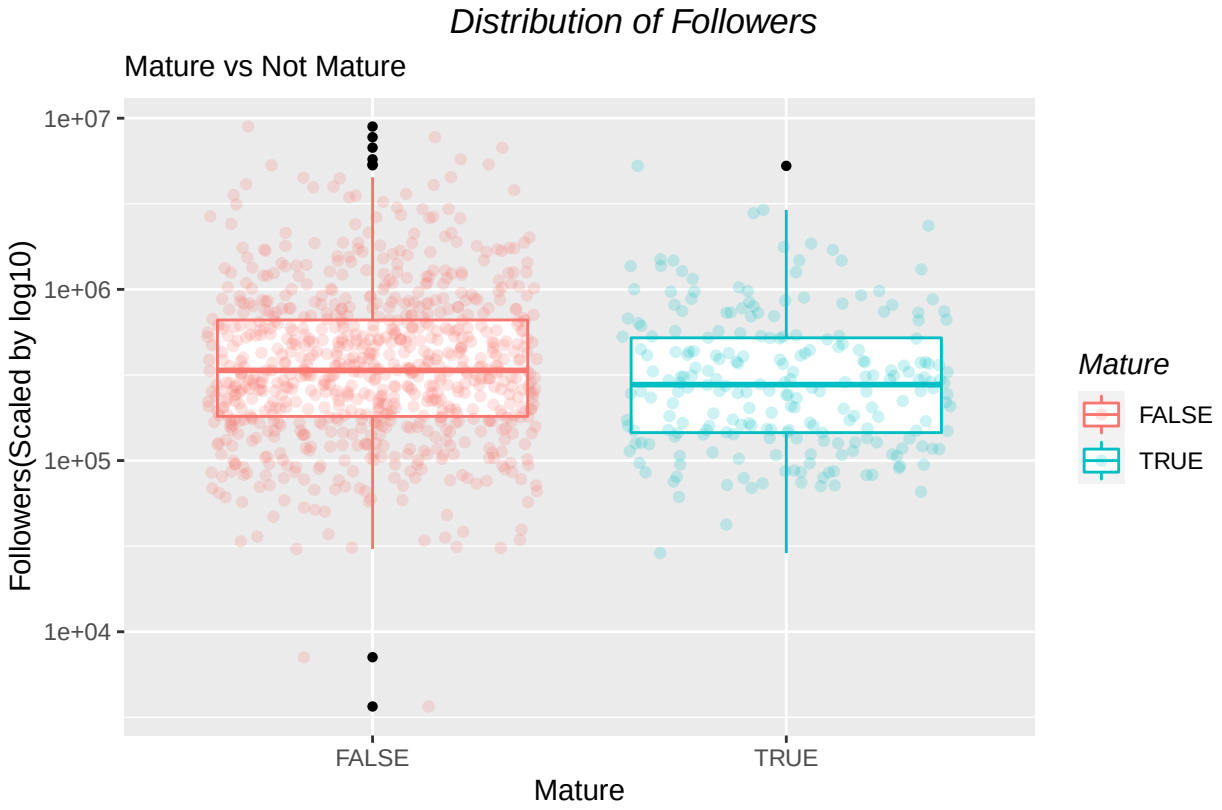



```
#Box Plot of the average distribution of followers whether Streamer is partnered or not
ggplot(data, aes(partnered,
                 followers,
                 color=partnered))+
  geom_boxplot(outlier.colour = "black",
               outlier.shape = 16)+
   geom_jitter(aes(color = partnered),
               alpha = 0.2)+
  scale_y_log10()+
  labs(title = "Distribution of Followers",
       subtitle = " Parntered vs Not Partnered",
       y = "Followers(Scaled by log10)",
       x = "Partnered",
       caption ="source https://www.kaggle.com/aayushmishra1512/twitchdata",
       color = "Partnership Status")+
  theme(plot.title=element_text(
    face = "italic",
    hjust = 0.6),
    legend.title = element_text(face = "italic"))
```



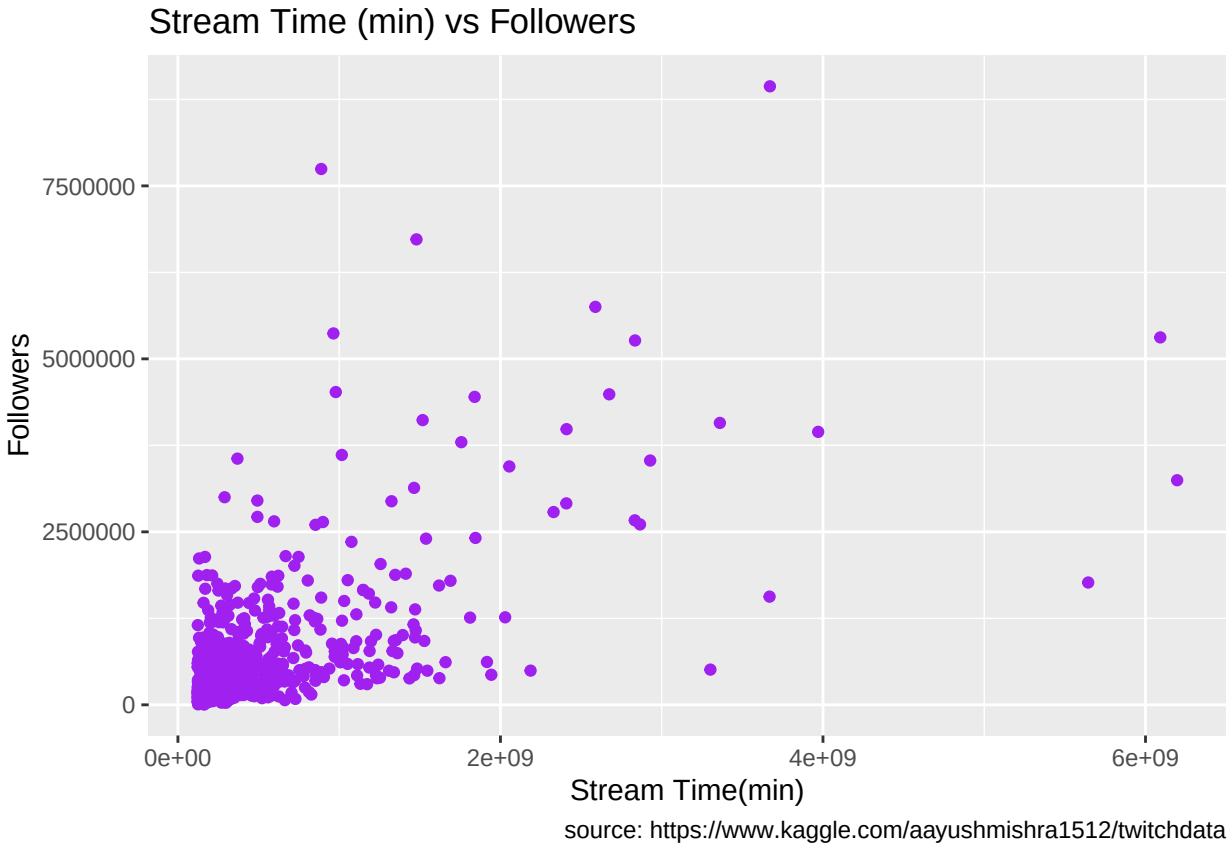
source https://www.kaggle.com/aayushmishra1512/twitchdata

```
#Box plot of the average distribution of followers whether streamer is Mature or not
ggplot(data, aes(mature,
                 followers,
                 color=mature))+
  geom_boxplot(outlier.colour = "black",
               outlier.shape = 16)+
   geom_jitter(aes(color = mature),
               alpha = 0.2)+
  scale_y_log10()+
  labs(title = "Distribution of Followers",
       subtitle = "Mature vs Not Mature",
       y = "Followers(Scaled by log10)",
       x = "Mature",
       caption ="source https://www.kaggle.com/aayushmishra1512/twitchdata",
       color = "Mature")+
  theme(plot.title=element_text(
    face = "italic",
    hjust = 0.6),
    legend.title = element_text(face = "italic"))
```




```
#Scatter Plot of Stream Time vs Followers

ggplot(data, aes(watch_time_minutes, followers)) +
  geom_point(color = "purple")+
  labs(title = "Stream Time (min) vs Followers",
       x = "Stream Time(min)",
       y = "Followers",
       caption = "source: https://www.kaggle.com/aayushmishra1512/twitchdata")
```



Final Conclusions from Inital Data Visualization/Data Analysis Plan

From the initial visualization that was performed one of the most prominent observations is that the data does contain outliers as shown by the box plots and the summary of the data. In order to perform a better analysis this need to be taken into account. The effect the outliers have in this data set can especially be shown in the scatter plot. In the plot there is a large concentration of data that can not be analyzed because the scale of the plot had to account for the outlying data. Most likely throughout the project we will be using a lot of scatter plots because we will be testing multiple variables against followers in order to find out which one's have a positive correlation. The main method for statistical analysis will be testing the correlation between followers and multiple other variables like, stream time, stream language, mature content, and partnership to name a few.