MyProject#1

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Project 1: How does three of the most sports video games played affect the giants of video game console manufacturers ?

Mission Statement

For this project, studies were made to determine the impact that popular sports video games have on the stock price of Sony, Microsoft and Nintendo. Also, Another study was made to determine if there is a correlation between the stock prices of those three video game consoles manufacturers.

- **organization and credibility of the data**

The Data for the stock prices of Sony, Microsoft and Nintendo were found on Yahoo finance where historical data for those three companies were retrieved since the year 2007. Yahoo finance is a credible and reliable source of data for stock prices and is ranked 15th among the largest news and media websites. The data are well organized and the historical prices can be found by entering a time period or a frequency.

- **Sort and filter the data**

This Part of the analysis will consist of getting the stock prices from Sony, Microsoft and Nintendo and then merge them together and look for any incongruencies in the data.

```
library(quantmod)  #access historical stock prices
library(dplyr)
library(tidyverse)
library(gtrendsR)  #returns the popularity of google search terms over time
library(maps)      #creates maps of the United States.
getSymbols(c("SONY","MSFT","NTDOY"))
## [1] "SONY"  "MSFT"  "NTDOY"
```

Merging the stock data into one data frame

```
stocks <- data.frame("Sony" = SONY$SONY.Close, "Microsoft" = MSFT$MSFT.Close,
"Nintendo"= NTDOY$NTDOY.Close, "Date" =
as.Date(row.names(as.data.frame(SONY))))
```

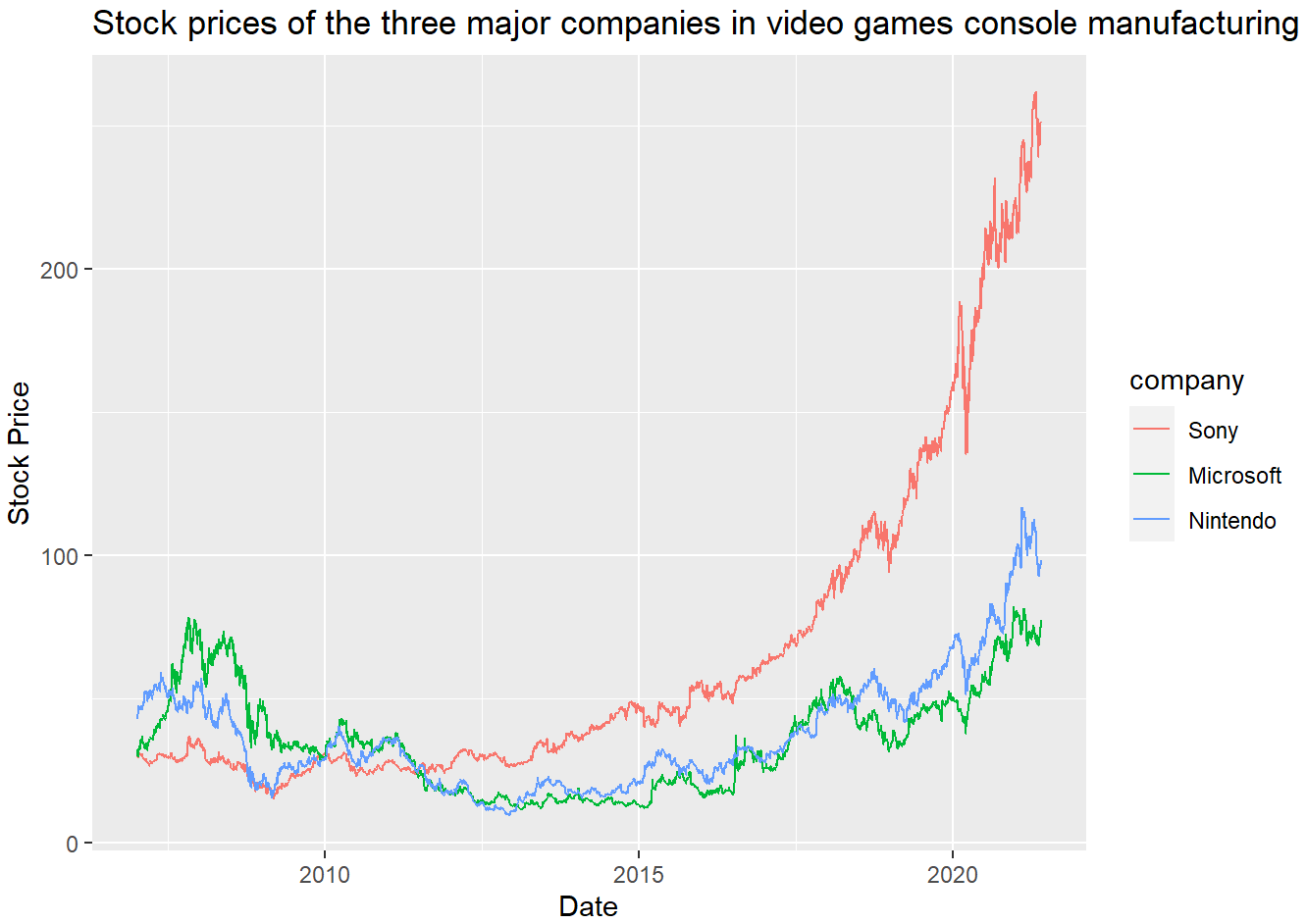
Gathering the columns into key-value pairs to create a long format table and Reshaping the data frame so one column contains the type of stock

```
 stock_v2 <- stocks %>%
  gather(key = "stock", value = "value", -Date)
```

Stock Prices of Sony, Microsoft and Nintendo over the last 14 years

Plotting the stock prices of Sony, Microsoft and Nintendo

```
stock_v2 %>%
  ggplot() + geom_line(aes(x = Date, y= value, color = stock)) +
  scale_color_discrete(name = "company", labels = c("Sony", "Microsoft",
"Nintendo")) +
  labs(title = "Stock prices of the three major companies in video games
console manufacturing", y = "Stock Price")
```



From this plot, we can observe that over the past 14 years, the stock of Sony has increased and has skyrocketed in the last 5 years compared to the stock price of Nintendo and Microsoft which decreased between 2005 and 2015 but those stock price have increased but not as much as the stock price of Sony.

popular sports video games trends on Google

This analysis consisted of retrieving data from google regarding how many times the three most popular sports video games were trending on Google and display those information (popularity of google search terms, trends or number of hits over time) which will be returned online by Google trends.

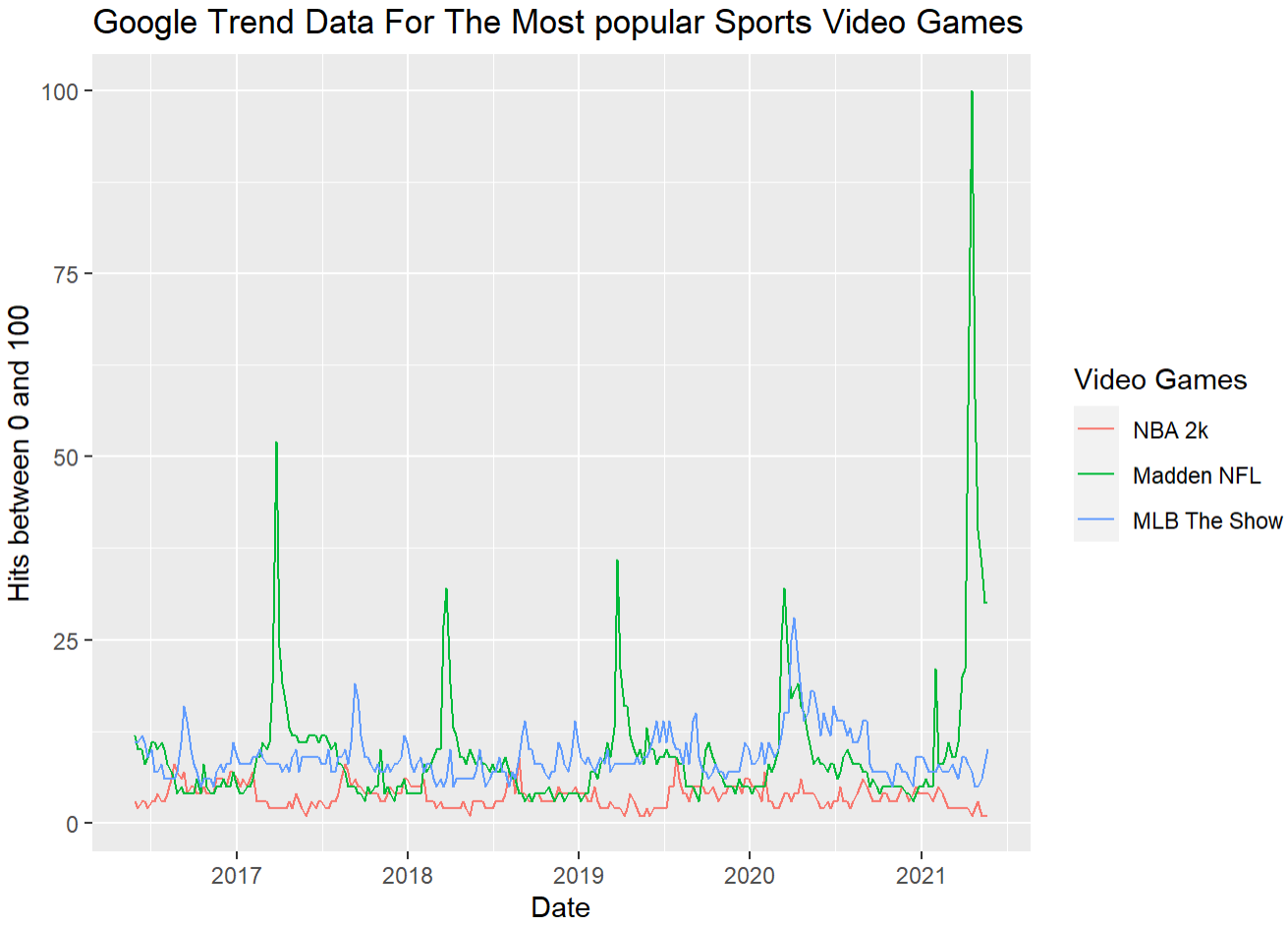
Creating a data frame consisting of the number of hits for NBA 2k, the most popular basketball video game, Madden NFL, the most popular Football video game and MLB The Show, the most popular baseball video game.

```
trends <- gtrends(keyword=c("NBA 2k","Madden NFL", "MLB The Show"))
trends_over_time <- trends$interest_over_time
trends_over_time <- trends_over_time %>%
  mutate(hits = as.numeric(hits))
```

```
trends_over_time <- trends_over_time %>%
  replace_na(list(hits = 0))
```

Plotting the google trends for those three popular sports video games

```
trends_over_time %>% ggplot() + geom_line(aes(date, hits, color = keyword)) +
  scale_color_discrete(name = "Video Games", labels = c("NBA 2k","Madden
NFL", "MLB The Show")) +
  labs(title = "Google Trend Data For The Most popular Sports Video Games", y
= "Hits between 0 and 100", x = "Date")
```



From this plot, we can notice that there has been some ups and downs in the number of hits or google trends for those three popular sports video games, which are relatively low, however, Madden NFL had the biggest jump in terms of trends throughout the years, especially at the beginning of 2021 approaching approximately the 100 hits before a sudden decline.

Next, we are going to look at the the trend data and the interests for those video games by region and identify which video games have the most hits and the lowest hits by regions or states.

```
state_trends <-  gtrends(keyword=c("NBA 2k","Madden NFL", "MLB The Show"),
geo = "US")
```

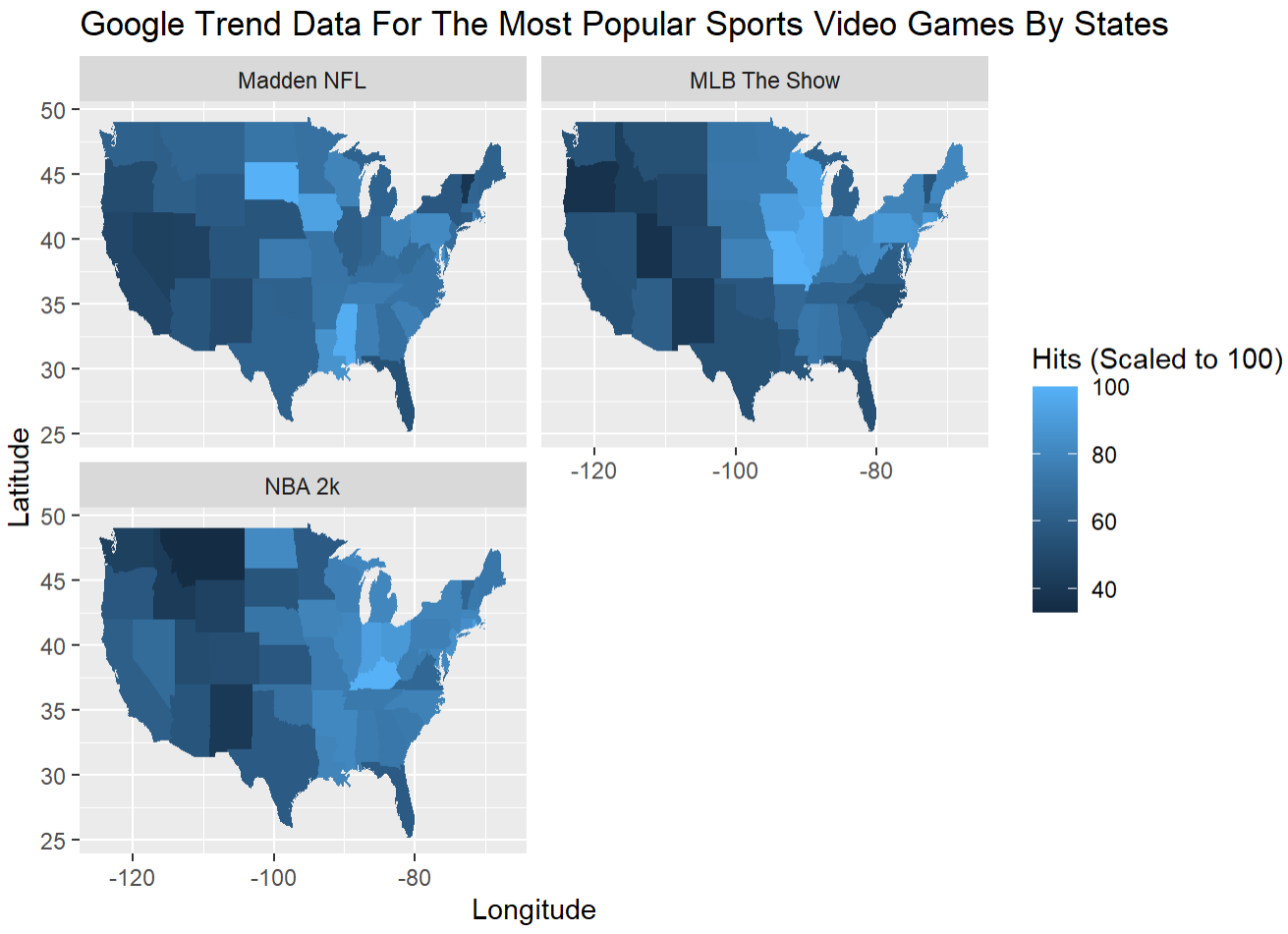
```
states <- state_trends$interest_by_region
states <- states %>%
  mutate(location = tolower(location))
```

Getting the map data

```
states_map <- map_data("state")
```

Plotting the map data

```
states %>% ggplot(aes(map_id = location)) +
  geom_map(aes(fill = hits), map = states_map) +
  expand_limits(x = states_map$long, y = states_map$lat) +
  facet_wrap(~ keyword, nrow = 2) +
  labs(title = "Google Trend Data For The Most Popular Sports Video Games By
States", x = "Longitude", y = "Latitude") +
  scale_fill_continuous(name = "Hits (Scaled to 100)")
```



From this map, we can see that NBA 2k seems to be more popular in the north east regions of the country as well as MLB The Show which has the most hits in the north region in state such as Iowa, Illinois,Nebraska and Minnesota. States like Louisiana, Mississippi,South Dakota and

Iowa seem to like Madden NFL. This data can be helpful for video games retailers to help them advertise these popular sports video games.