

Monetizing YouTube Videos

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For our project, we chose to analyze YouTube trends in different countries. Specifically, we decided to focus on Great Britain, France, Canada and the U.S. due to their population's involvement on YouTube as compared to other countries. After obtaining the dataset from Kaggle.com, we formulated our central question: From a marketing standpoint, where should the majority of money be spent in terms of generating and maximizing revenue (Return on Investment - ROI). There was a plethora of data to sort through - each country's individual csv file had approximately forty thousand rows of data. It is important to note that the data only includes videos that were considered to be 'trending' within the selected countries from December of 2017 through May of 2018.

As defined by Google, 'trending' refers to videos that are "currently popular or widely discussed online." According to this series of articles: <https://www.tubefilter.com/2016/06/23/reverse-engineering-youtube-algorithm/> the short definition of the way youtube determines trending videos is the following: Has the link been embedded in popular external websites and if so, how many times? How many views did the video get after being redirected from outside youtube? To how many people was this video recommended? And of course, how many total views and non-emoji comment interaction did this video receive in how much time? How often does the viewer upload? How long does a user stay on the channel or on YouTube after watching this video? As we can see, this does not necessarily mean that the video is popular because many people enjoyed the content. There are also extremely controversial videos which meet these requirements and have made the "Trending" page. In the beginning of the cleanup process, we removed any entries where the video was removed; if we include these removed videos, we do see appearances of "Deleted Video"s in the Most liked/disliked lists as well as other "popularity" plots. As trending videos, if we assume that most of these deleted videos were only removed due to unpopularity or copyright claims, we confirm that the following data does not necessarily mean that all high-traffic videos are well-loved. They may also be well-criticized.

Question for research:

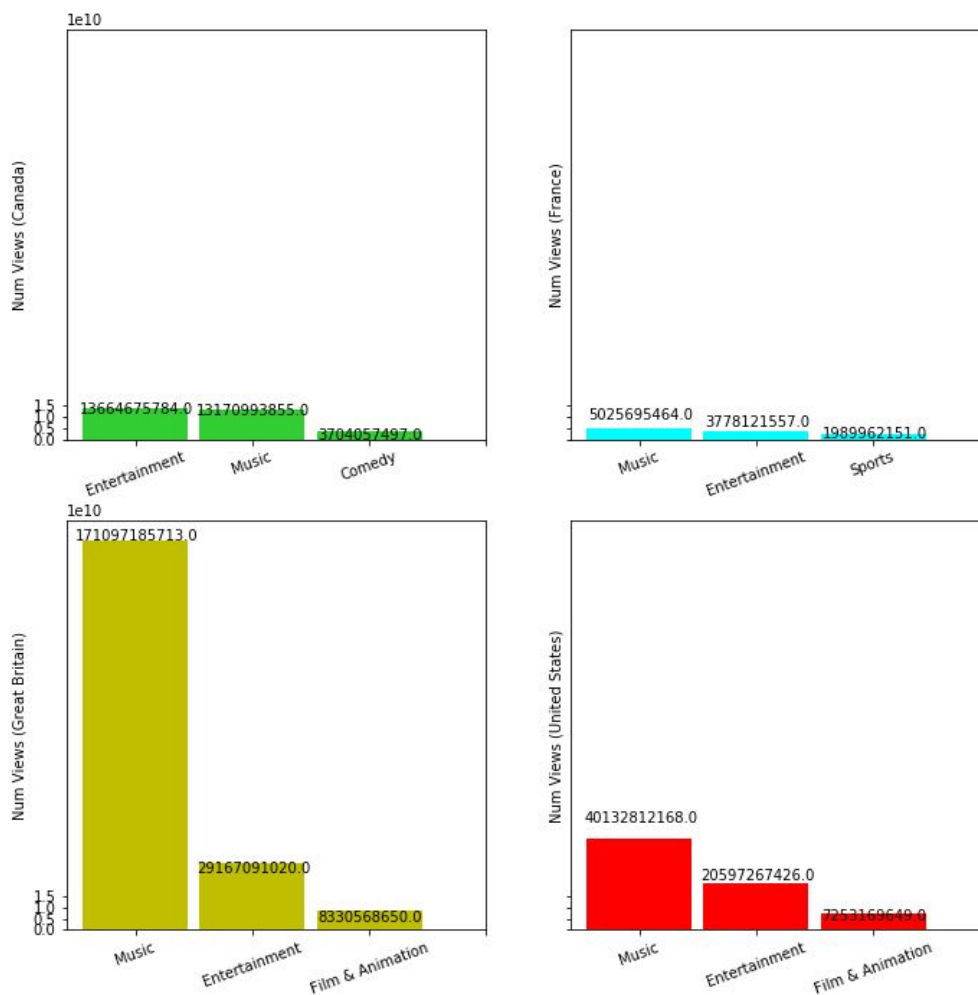
Where should marketing dollars be spent in terms of generating and maximizing revenue?

It was clear from the data that, in general, the most widely viewed and active videos were music or entertainment related, with Film & Animation or Comedy as an average third-place. This implies that they have the largest audience, which makes sense as Entertainment and Music are categories targeted to all age groups/interests/genres, whereas something like Auto & Vehicles has a specific audience and would not appeal to, say, a toddler who would much rather watch a disney music video than an auto informational.

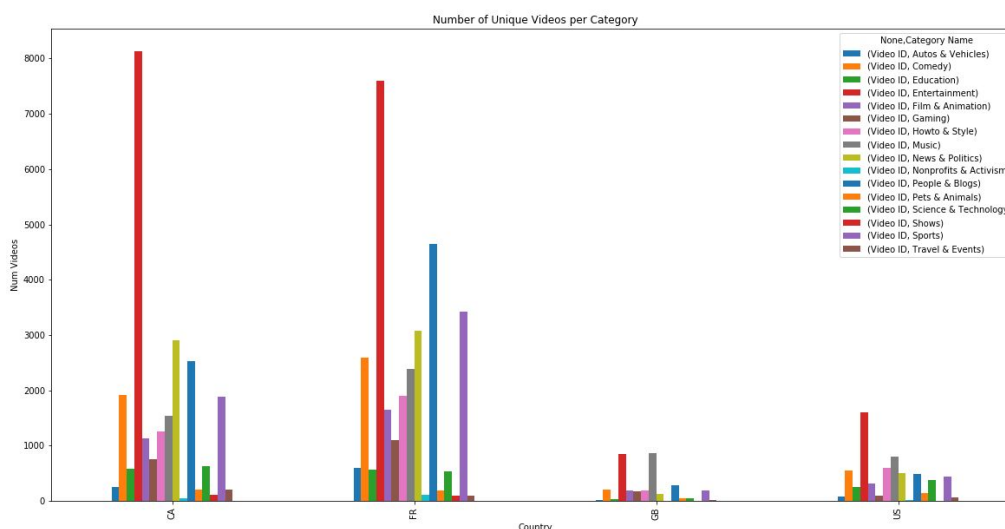
We found that although Music and Entertainment were the top categories for most views, and even most liked, they were also the most commonly disliked categories for each country, which implies a certain risk. Since there is so much activity in these categories (views and likes/dislikes, mainly), there is a much stronger probability of an audience member disliking your content and therefore criticizing it in the form of dislikes. But if a marketer is focusing solely on advertising, this would still be an advantage, as high traffic with negative sentiment is still high traffic!

Supporting question 1: What is the most viewed category in each country?

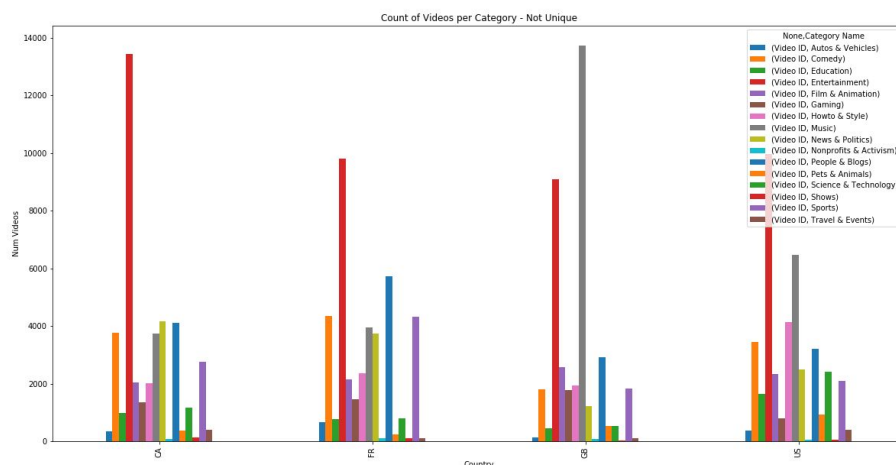
Most Viewed Categories per Country



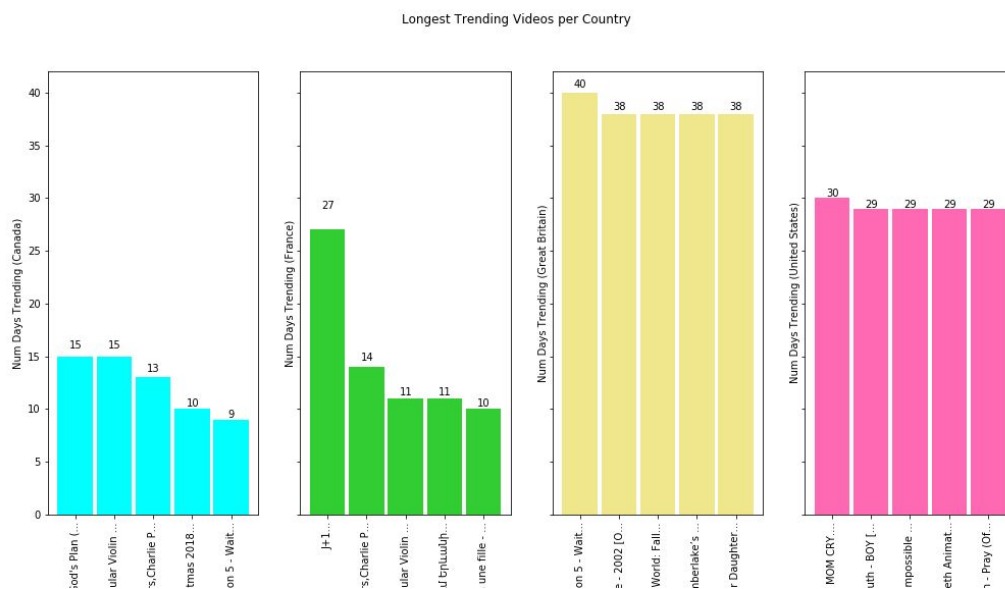
We found this question to be the most revealing in terms of answering our research question. After analyzing four different countries, we discovered that the most watched type of videos on YouTube are music and entertainment related. The most viewed category was Music for France/Britain/USA while it was Entertainment for Canada. The second most viewed category was Entertainment for France/Britain/USA while it was Music for Canada. What is interesting to see is that Music and Entertainment have almost the same number of views in Canada; Music trails Entertainment by only 500 million views. In Great Britain, for example, Entertainment trailed Music in views by a whopping 140 billion! For the USA, Entertainment followed by about 20 billion views, while for France it was only about 2 billion views.



When we look at the plots of the number of UNIQUE videos per category for each country, we see that the USA and Britain actually have the least number of unique videos, while France and Canada had a much larger set of unique videos. This discrepancy between the number of unique videos and the magnitude of interaction within each country implies that in GB and the USA, there are certain channels and categories that monopolize the market and garner an astronomical amount of views, while in France and Canada, there is a wider pool of videos that are in the spotlight for a shorter amount of time, and therefore gain less views/activity. If we look at the COUNT of videos per category (meaning even if one video was trending for more than one day and therefore has multiple hits, we are counting it as another video), we see that now the USA and GB are much closer in magnitude to France and Canada. The same videos keep trending and gaining more and more views in the USA and Great Britain. We will elaborate on this further in Supporting Questions 3.



This also implies that there is generally a lot more activity/audience in the USA and GB than in France and Canada, and, presumably, most other countries due not only to their population, but also due to the involvement of social media in everything in more metropolitan areas than suburban areas. Great Britain and the United States have many more metropolitan areas than other countries, and have historically spearheaded social media. Therefore, it makes sense that they are the countries with the most views.



If we look at the Longest trending videos per country plot, we can see that for France and Canada, the longest trending videos trend for generally between 10-15 days, while for the USA and GB, the longest videos tended to trend for between 30 and 40 days, with almost an exact 10 day jump from the USA to GB. This further solidifies the argument that there is a smaller pool of unique popular videos in the the USA and GB that have significantly more views, while there is a wider pool of unique popular videos elsewhere that have less views each.

We can conclude that if one is hoping just to get the most views across countries, regardless of whether it is positive feedback or negative feedback, it would be wise to invest in

music or entertainment. If you market specifically to GB and USA, videos have a greater chance of trending for a longer period of time and therefore getting more views on one video. Music is most popular in Great Britain in comparison to other categories, so if you are aiming to advertise on more obscure categories, marketing to non-GB or non-US platforms may give you more of a chance to get people to see your ads. In both Great Britain and the USA, 'Film & Animation' is the third most popular category which again makes sense for the same reasons as Music and Entertainment. Since Great Britain and the USA also has the most audience activity, it is recommended to focus on these countries' markets when planning ad campaigns in order to maximize views. Therefore, venturing into any of the three categories (Music, Entertainment, or Film & Animation) will give you the most revenue as compared to other categories. These are the categories we consider to be the most profitable in terms of generating new revenue and or capitalizing, return on investment.

**Supporting question 2:
What was the most liked/disliked category?**

Music is the most liked category for all countries, with Entertainment in second place for all countries save for France. France's second place favorite is Comedy, but still its number of views for its Comedy category is less than the number of views for Comedy in the US or Canada, who both have Comedy in third place for most likes, but still have more views for the category than France.

Country	Num Likes	Category
CA	5.64E+08	Music
CA	3.87E+08	Entertainment
CA	1.96E+08	Comedy
FR	2.77E+08	Music
FR	1.31E+08	Comedy
FR	1.18E+08	Entertainment
GB	3.74E+09	Music
GB	7.33E+08	Entertainment
GB	1.46E+08	Film & Animation
US	1.42E+09	Music
US	5.3E+08	Entertainment
US	2.16E+08	Comedy

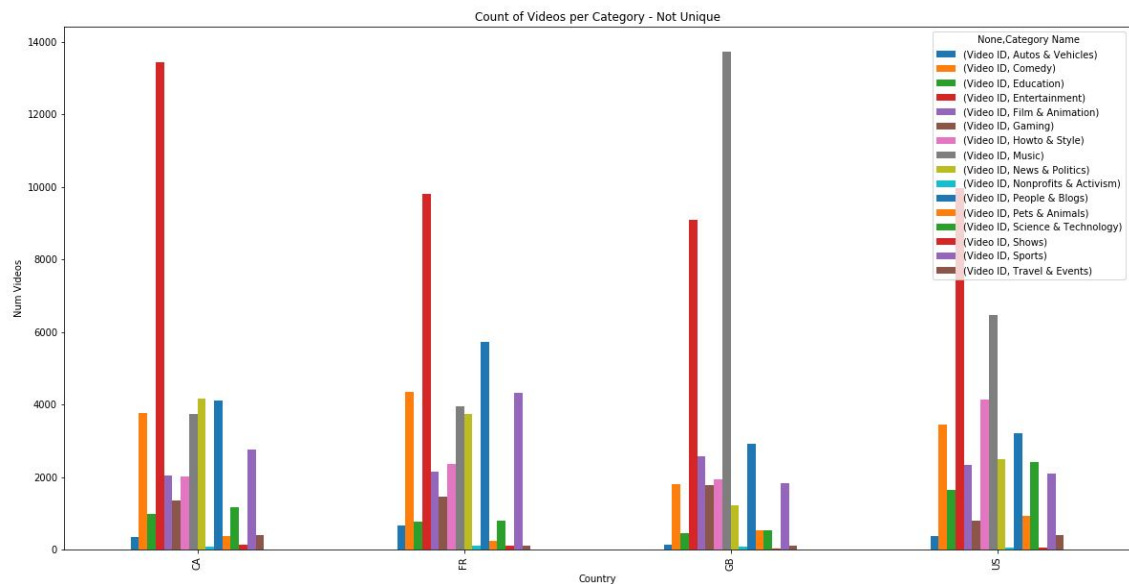
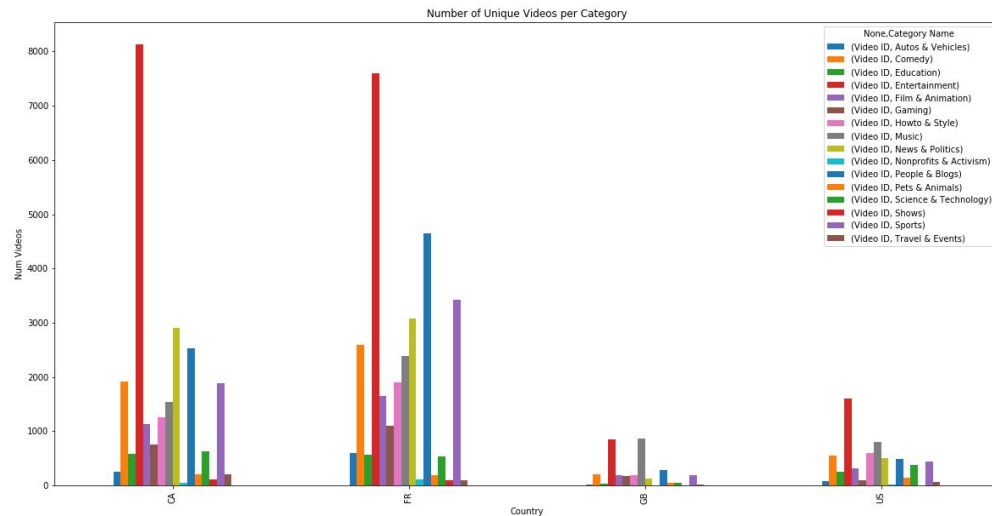
For Canada and France, Entertainment is the most disliked category with Music at a close second. For Great Britain and the USA, however, Music is also the most disliked category. Again, France has less views than the other countries, but their third most disliked category is Comedy. People & Blogs is the third most disliked category for Canada, Great Britain, and the USA, which means that they have a high traffic rate but a low positive sentiment rate. If

marketers don't particularly care if they are receiving positive or negative feedback as long as they get views, they may also want to categorize their videos under 'People & Blogs'.

Since Music is the most commonly liked and disliked category, especially by the USA and GB which have the most active audience, this proves the risk as well as benefits of choosing to invest in these categories. You have the potential to reach millions of views, but it is almost an equal probability to be received positively or negatively. With the right research into trends in the music/entertainment industry and audience preferences and fads, investing in these categories will produce the most turnover for interaction as compared to other categories. Despite being volatile categories in terms of sentiment, Music and Entertainment videos receive the highest traffic and therefore advertisements on these videos would produce the greatest ROI.

Country	Num Dislikes	Category
CA	25784680	Entertainment
CA	22092788	Music
CA	9475945	People & Blogs
FR	10350981	Entertainment
FR	9771465	Music
FR	3390777	Comedy
GB	159341838	Music
GB	86715370	Entertainment
GB	12002570	People & Blogs
US	51179005	Music
US	42975898	Entertainment
US	10187901	People & Blogs

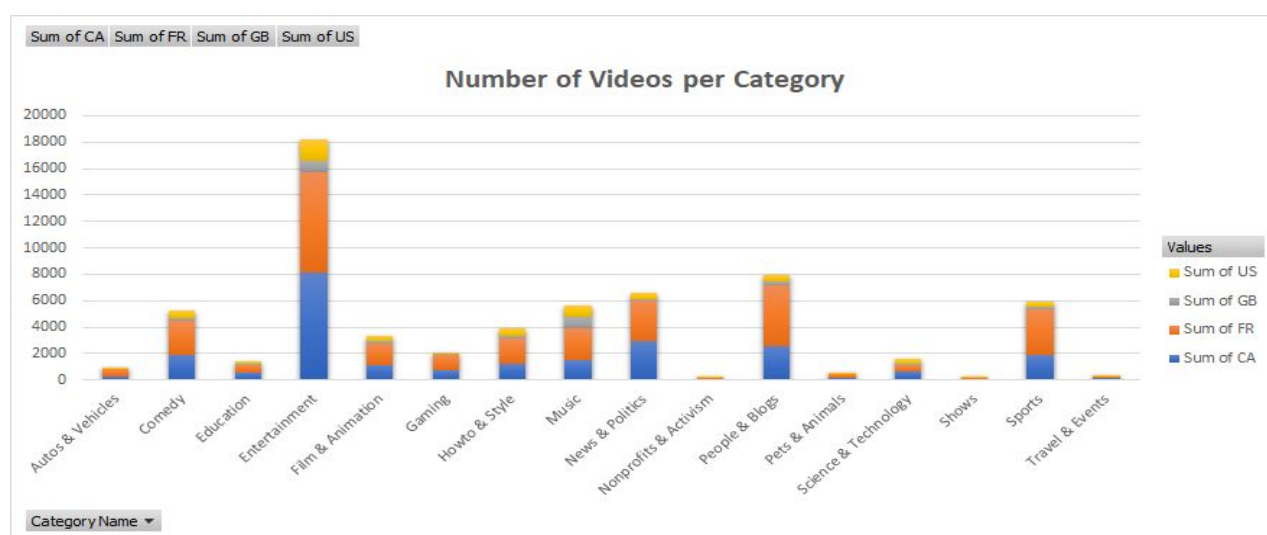
Supporting Question 3: Which category has the most views in proportion to number of videos?



Canada and France have many more Entertainment videos than Music videos even though their Music category has the most views. This still makes sense though, as for both Canada and France, their Entertainment and Music categories have much closer numbers than the USA or Great Britain. In the United States and Great Britain, there are still more entertainment videos than music videos, and in the USA there are more longer-trending entertainment videos than music videos, but in Great Britain, music videos tend to trend for

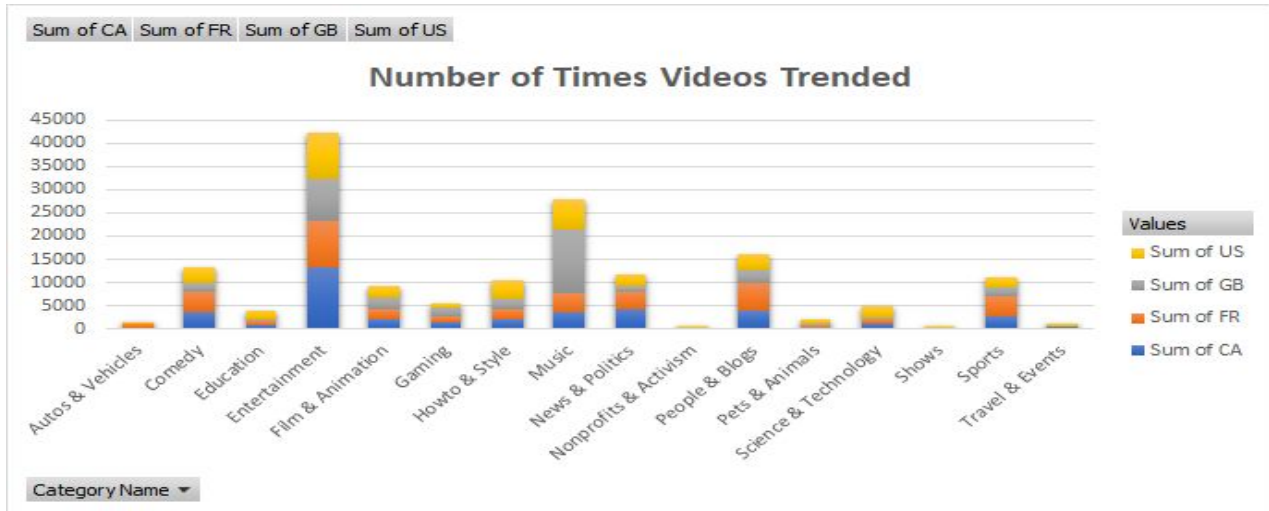
much longer than entertainment videos, which is shown in the non-unique graph. This also makes sense, since Great Britain has an astronomically large number of views for Music than Entertainment. In the USA, Music does still have a significantly larger number of views for Music than Entertainment, which solidifies the fact that in Great Britain and the USA, music videos trend for longer and garner many more views that keep them on the trending page for longer as well--another reason why marketers should target these categories to maximize on trending time and views.

We also found that France, in general, had more videos per category than most other countries while still having the least views. This implies that France has the smallest view:video ratio, and is the least profitable market of the four countries.

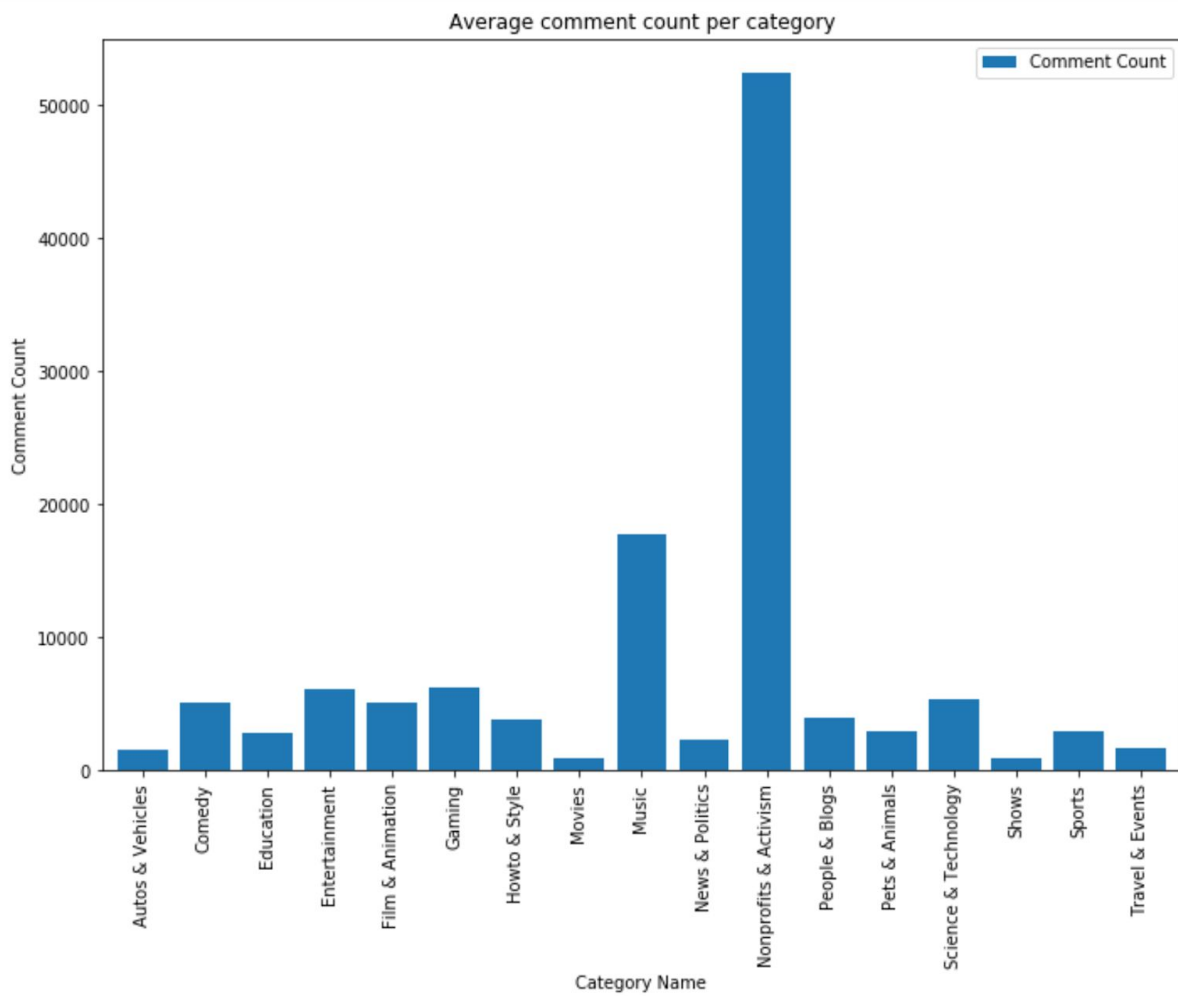


Our dataset, since it only showed us trending videos for all dates within a certain timeframe, we saw some repeats of videos where they were trending for multiple days. In the above graph, we show the *unique* entries for each videos, so that particular video's category was only counted once per video, even if it was trending for, say, 30 days.

In the below table, we are not looking at the unique entries, but rather taking each row of the dataset as a separate video. This greatly equalizes the proportion of videos from each of these countries in each category--in the US and Great Britain, there is a smaller variety of videos that make it to the trending page, but stay there for much longer. In Canada and France, we see the opposite--there is a greater variety of videos that tend to trend for a shorter period of time. Therefore, the USA and GB are the great markets to target very specific audiences and place ads on specific popular videos to maximize views.



Supporting question 4:
Which category had the highest comment count?



It is evident that the view count of a video, and the number of likes and/or dislikes it receives, are revealing in terms of what the masses prefer. However, we also wanted to look at other potential indicators, such as the average number of comments by category type. While comments can be either negative, positive, or neutral, the number of comments itself reveals topics that people like to discuss or debate. The outcome of this particular analysis was surprising. The vast majority of video categories had average comment counts below 10,000, while videos in the “Nonprofits & Activism” had an average of 52,396 comments. We believe that the reason for this category being the highest commented is because people like to discuss and interact on these topics - and share the videos with their friends/colleagues to see how they react. It is also interesting to note that the “Nonprofits & Activism” category had, in general, less videos made than in other categories. This means that, in order to have such a drastic difference in comment count between this category and the rest, there must be a significantly larger amount of comments per video.

The next closest category in terms of comment count is Music, but as the number of music videos is significantly larger than the number of Nonprofit videos, we can still safely say that the category to elicit the most audience interaction in the comment section would be Nonprofits & Activism.

A final note that we found interesting was that the average comment count of “News & Politics” videos was much lower than expected, at approximately 2,200 comments per video. In comparison to “Nonprofits & Activism,” one may wonder why this number is so low (approximately a 50,000 average comment count difference!). We believe that this difference may be due to the fact that people do not necessarily use YouTube as their primary source of news information. Rather, people trust their favorite apps, and news television stations, as trustworthy sources.

For marketers that are releasing videos rather than choosing videos on which to advertise, if they are looking not for views, but for audience interaction, getting involved in Nonprofits & Activism would garner the most interaction in the comments section of YouTube.

Supporting Question 5: Interesting Trends?

The channel ‘ibighit’ is popular in 3 of the four countries save for Great Britain, and that channel predominantly covers music videos for Korean pop bands such as BTS -- one of the most widely listened-to bands in the world, further evidenced by the data--one of the top three viewed videos in both the USA as well as France was the BTS “Fake Love” Music video. For the United States and Great Britain, all three of the most viewed videos per category were music videos, and for Canada and France, all except the number 1 most viewed videos were music videos. For both Canada and France, the most viewed video was YouTube Rewind, which falls into Entertainment.

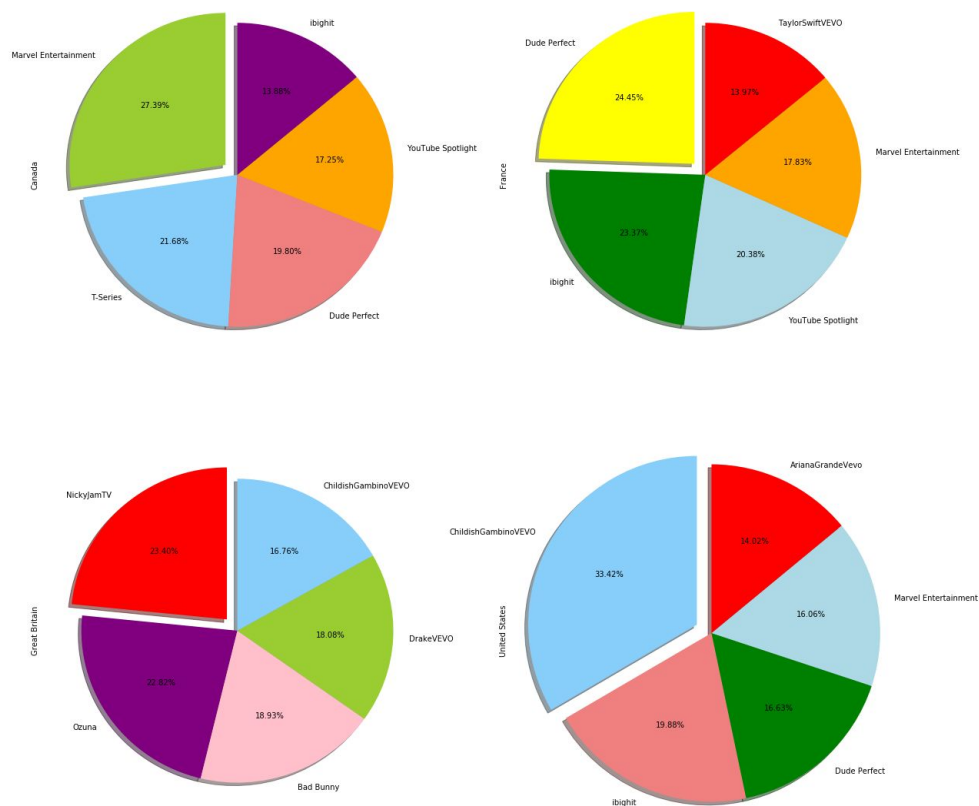
An interesting note is that Dude Perfect, a channel about Sport and Comedy as well as People & Blogs, is one of the most viewed channels in all the countries except Great Britain, whereas all the other most viewed channels in all the countries are either Music channels (Artist

Vevo's, Ozuna, Bad Bunny, NickyjamTV) or Entertainment channels (Youtube Spotlight, Marvel Entertainment).

Conclusion:

We can confirm that if a company wants to maximize their revenue by investing their advertising dollars in certain areas, it is wise to market their ads on as many Music category videos as possible, as well as Entertainment and Film & Animation. Of these four countries, we recommend Great Britain as well as the USA as the best markets to spend advertising dollars.

Most popular Channels per country



Most Viewed Videos per Country

