Youtube Data Analysis

Let's import all required necessary packages !

In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

In [2]:

```
comments_df = pd.read_csv('UScomments.csv', error_bad_lines = False)
```

```
b'Skipping line 41589: expected 4 fields, saw 11\nSkipping line 51628:
expected 4 fields, saw 7\nSkipping line 114465: expected 4 fields, saw
5\n'
b'Skipping line 142496: expected 4 fields, saw 8\nSkipping line 18973
2: expected 4 fields, saw 6\nSkipping line 245218: expected 4 fields,
saw 7\n'
b'Skipping line 388430: expected 4 fields, saw 5\n'
```

In [3]:

```
comments_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 691400 entries, 0 to 691399
Data columns (total 4 columns):
 #   Column        Non-Null Count   Dtype
---  ------        --------------   -----
 0   video_id      691400 non-null  object
 1   comment_text  691375 non-null  object
 2   likes         691400 non-null  object
 3   replies       691400 non-null  object
dtypes: object(4)
memory usage: 21.1+ MB
```

In [4]:

```
comments_df.shape
```

Out[4]:

```
(691400, 4)
```

In [5]:

```
comments_df.isnull().sum()
```

Out[5]:

```
video_id         0
comment_text    25
likes            0
replies          0
dtype: int64
```

In [6]:

```
comments_df.dropna(inplace = True)
```

In [7]:

```
comments_df.isnull().sum()
```

Out[7]:

```
video_id        0
comment_text    0
likes           0
replies         0
dtype: int64
```

In [8]:

```
comments_df.head()
```

Out[8]:

	video_id	comment_text	likes	replies
0	XpVt6Z1Gjjo	Logan Paul it's yo big day !!!!!	4	0
1	XpVt6Z1Gjjo	I've been following you from the start of your...	3	0
2	XpVt6Z1Gjjo	Say hi to Kong and maverick for me	3	0
3	XpVt6Z1Gjjo	MY FAN . attendance	3	0
4	XpVt6Z1Gjjo	trending 😉	3	0

In [9]:

```
comments_df.describe()
```

Out[9]:

	video_id	comment_text	likes	replies
count	691375	691375	691375	691375
unique	2266	434076	1284	479
top	LunHybOKIjU	Lol	0	0
freq	800	310	456870	525706

Perform Sentiment Analysis

> Sentiment analysis using textblob which is a NLP library built on top of NLTK.

In [10]:

```
from textblob import TextBlob
```

In [11]:

```
df = comments_df[0:1000]
```

In [12]:

```
df.head()
```

Out[12]:

	video_id	comment_text	likes	replies
0	XpVt6Z1Gjjo	Logan Paul it's yo big day ‼‼‼‼	4	0
1	XpVt6Z1Gjjo	I've been following you from the start of your...	3	0
2	XpVt6Z1Gjjo	Say hi to Kong and maverick for me	3	0
3	XpVt6Z1Gjjo	MY FAN . attendance	3	0
4	XpVt6Z1Gjjo	trending 😉	3	0

In [13]:

```
TextBlob('Logan Paul its yo big day ‼‼‼‼').sentiment.polarity
```

Out[13]:

```
0.0
```

In [14]:

```
TextBlob('MY FAN attendance').sentiment.polarity
```

Out[14]:

```
0.0
```

In [15]:

```
# Perform polarity
polarity = []
for comment in comments_df['comment_text']:
    try:
        polarity.append(TextBlob(comment).sentiment.polarity)
    except:
        polarity.append(0)
```

In [16]:

```
# Check polarity Data
polarity[0:20]
```

Out[16]:

```
[0.0,
 0.0,
 0.0,
 0.0,
 0.0,
 0.0,
 0.0,
 0.0,
 0.8,
 -0.13571428571428573,
 0.0,
 0.2,
 -0.023333333333333352,
 0.5,
 0.0,
 0.8,
 -0.2916666666666667,
 0.0,
 0.25,
 -0.8]
```

In [17]:

```
comments_df['polarity'] = polarity
```

In [18]:

```
comments_df.head()
```

Out[18]:

	video_id	comment_text	likes	replies	polarity
0	XpVt6Z1Gjjo	Logan Paul it's yo big day !!!!!	4	0	0.0
1	XpVt6Z1Gjjo	I've been following you from the start of your...	3	0	0.0
2	XpVt6Z1Gjjo	Say hi to Kong and maverick for me	3	0	0.0
3	XpVt6Z1Gjjo	MY FAN . attendance	3	0	0.0
4	XpVt6Z1Gjjo	trending 😉	3	0	0.0

In [19]:

```
comments_df.tail()
```

Out[19]:

	video_id	comment_text	likes	replies	polarity
691395	EoejGgUNmVU	Лучшая	1	0	0.0
691396	EoejGgUNmVU	qu'est ce que j'aimerais que tu viennes à Roan...	0	0	0.0
691397	EoejGgUNmVU	Ven a mexico! 😍 te amo LP	0	0	0.0
691398	EoejGgUNmVU	Islığı yeter...	0	0	0.0
691399	EoejGgUNmVU	Kocham tą piosenkę😍❤️❤️❤️byłam zakochana po uszy ...	0	0	0.0

In [20]:

```
## Check positive comment
pos_comments = comments_df[comments_df['polarity'] == 1]
pos_comments.head()
```

Out[20]:

	video_id	comment_text	likes	replies	polarity
64	XpVt6Z1Gjjo	yu are the best	1	0	1.0
156	cLdxuaxaQwc	Power is the disease. Care is the cure. Keep...	0	0	1.0
227	WYYvHb03Eog	YAS Can't wait to get it! I just need to sell ...	0	0	1.0
307	sjlHnJvXdQs	This is priceless	0	0	1.0
319	sjlHnJvXdQs	Summed up perfectly	0	0	1.0

In [21]:

```
pos_comments['comment_text']
```

Out[21]:

```
64                                        yu are the best
156       Power is the disease.  Care is the cure.  Keep...
227       YAS Can't wait to get it! I just need to sell ...
307                                       This is priceless
319                                     Summed up perfectly
                                  ...
691373                                Perfect. Every version
691383                                     Me encantaaaaa <3
691388                                      Best song ever 🤘
691389                                 excellent performance
691393                                                    <3
Name: comment_text, Length: 19390, dtype: object
```

In [22]:

```
## Check negative comment
neg_comments = comments_df[comments_df['polarity'] == -1]
neg_comments.head()
```

Out[22]:

	video_id	comment_text	likes	replies	polarity
512	8wNr-NQImFg	BEN CARSON IS THE MAN!!!!! THEY HATE HIM CAUSE...	0	0	-1.0
562	8wNr-NQImFg	Well… The brain surgeon Ben Carson just proved...	0	0	-1.0
952	Ayb_2qbZHm4	WHY DID YOU MAKE FURRY FORCE?! SO NASTY!!!	0	0	-1.0
1371	vu_9muoxT50	WTF BRUH!!!!!!	0	0	-1.0
1391	vu_9muoxT50	cheeseus christ thats insane!!!	0	0	-1.0

In [23]:

```
neg_comments['comment_text']
```

Out[23]:

```
512       BEN CARSON IS THE MAN!!!!! THEY HATE HIM CAUSE...
562       Well… The brain surgeon Ben Carson just proved...
952              WHY DID YOU MAKE FURRY FORCE?! SO NASTY!!!
1371                                        WTF BRUH!!!!!!
1391                         cheeseus christ thats insane!!!
                                 ...
690788                                   Like Kelly she evil
690865                        R U FUCKING KIDDING ME?!?!?!?!
691073              This is horribly offensive please report
691180    Sink holes looks terrifying sinkholes sink you...
691224    Trump talked to the president of US Virgin Isl...
Name: comment_text, Length: 3508, dtype: object
```

In [85]:

```
pos_total_comment = ' '.join(pos_comments['comment_text'])
```

In [25]:

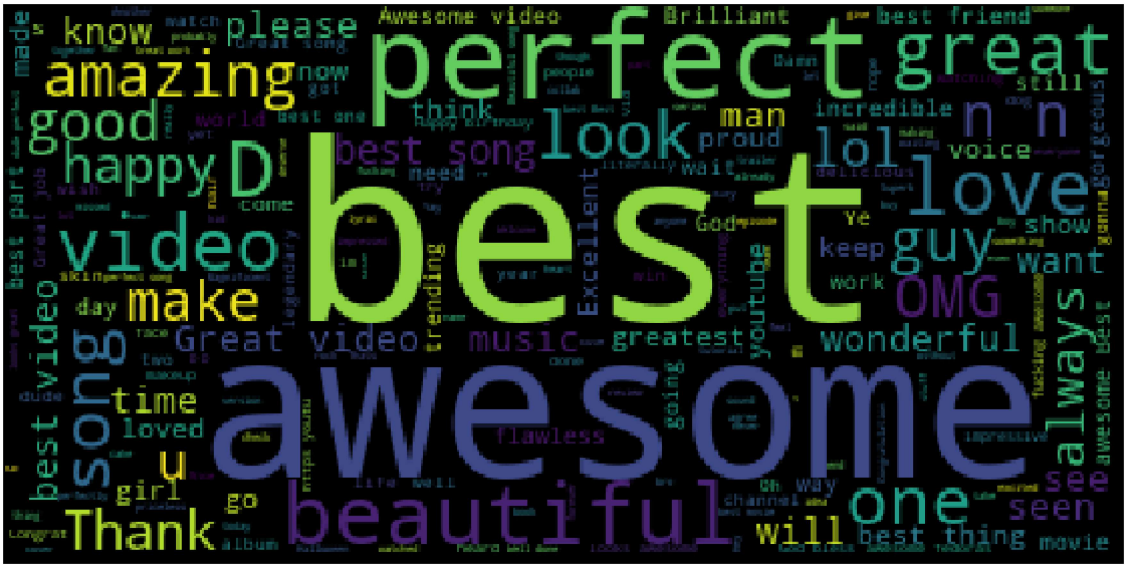
```
from wordcloud import WordCloud
from wordcloud import STOPWORDS
```

In [26]:

```
wordcloud = WordCloud(stopwords = set(STOPWORDS)).generate(pos_total_comment)
plt.figure(figsize = (10, 6))
plt.imshow(wordcloud)
plt.axis('off')
```

Out[26]:

```
(-0.5, 399.5, 199.5, -0.5)
```



In [86]:

```
neg_total_comment = ' '.join(neg_comments['comment_text'])
```

In [28]:

```
wordcloud = WordCloud(stopwords = set(STOPWORDS)).generate(neg_total_comment)
plt.figure(figsize = (10, 6))
plt.imshow(wordcloud)
plt.axis('off')
```

Out[28]:

```
(-0.5, 399.5, 199.5, -0.5)
```

Perform Emoji's Analysis

In [29]:

```
import emoji
```

In [30]:

```
print('\U0001F600')
```

😀

In [31]:

```
comments_df.head()
```

Out[31]:

	video_id	comment_text	likes	replies	polarity
0	XpVt6Z1Gjjo	Logan Paul it's yo big day !!!!!	4	0	0.0
1	XpVt6Z1Gjjo	I've been following you from the start of your...	3	0	0.0
2	XpVt6Z1Gjjo	Say hi to Kong and maverick for me	3	0	0.0
3	XpVt6Z1Gjjo	MY FAN . attendance	3	0	0.0
4	XpVt6Z1Gjjo	trending 😉	3	0	0.0

Every emoji has a Unicode associated with it '\U0001F600' is a unicode for 😀

In [32]:

```
### Lets extract emoji from comment
comment = 'treding 😉'
comment
```

Out[32]:

'treding 😉'

In [33]:

```
[c for c in comment if c in emoji.UNICODE_EMOJI_ENGLISH]
```

Out[33]:

['😉']

In [34]:

```
### Create a Emoji list from the comment

emoji_list = []
for comment in comments_df['comment_text']:
    for char in comment:
        if char in emoji.UNICODE_EMOJI_ENGLISH:
            emoji_list.append(char)
```

In [35]:

```
emoji_list[10:20]
```

Out[35]:

['💙', '👍', '👈', '😂', '🔥', '😂', '😂', '😂', '😂', '🐶']

In [36]:

```
1 len(emoji_list)
```

Out[36]:

```
294549
```

Extraxt the frequency ofthe emoji

In [37]:

```
1 from collections import Counter
```

In [38]:

```
1 Counter(emoji_list).most_common(10)
```

Out[38]:

```
[('😂', 36987),
 ('😍', 33453),
 ('❤', 31119),
 ('🔥', 8694),
 ('😭', 8398),
 ('👏', 5719),
 ('😘', 5545),
 ('👍', 5476),
 ('💖', 5359),
 ('💗', 5147)]
```

In [39]:

```
1 Counter(emoji_list).most_common(10)[0][0]
```

Out[39]:

```
'😂'
```

In [40]:

```
1 Counter(emoji_list).most_common(10)[1][0]
```

Out[40]:

```
'😍'
```

In [41]:

```
1 emojis = [Counter(emoji_list).most_common(10)[i][0] for i in range(10)]
```

In [42]:

```
1 emojis
```

Out[42]:

```
['😂', '😍', '❤', '🔥', '😭', '👏', '😘', '👍', '💖', '💗']
```

In [43]:

```
## Find frequency of the emoji
freq = [Counter(emoji_list).most_common(10)[i][1] for i in range(10)]
freq
```

Out[43]:

```
[36987, 33453, 31119, 8694, 8398, 5719, 5545, 5476, 5359, 5147]
```

In [44]:

```
import plotly.graph_objs as go
from plotly.offline import iplot
```

In [45]:

```
trace = go.Bar(x = emojis, y = freq)
data=trace
fig = go.Figure(data)
fig.show()
```

Collect entire Youtube Data

In [46]:

```
import os
```

In [47]:

```
path = r'C:\Users\Admin\Desktop\Practice\Youtube_project\additional_data'
```

In [48]:

```
files = os.listdir(path)
files
```

Out[48]:

```
['CAvideos.csv',
 'CA_category_id.json',
 'DEvideos.csv',
 'DE_category_id.json',
 'FRvideos.csv',
 'FR_category_id.json',
 'GBvideos.csv',
 'GB_category_id.json',
 'INvideos.csv',
 'IN_category_id.json',
 'JPvideos.csv',
 'JP_category_id.json',
 'KRvideos.csv',
 'KR_category_id.json',
 'MXvideos.csv',
 'MX_category_id.json',
 'RUvideos.csv',
 'RU_category_id.json',
 'USvideos.csv',
 'US_category_id.json']
```

In [49]:

```
for i in range(1, len(files), 2):
    print(i)
```

```
1
3
5
7
9
11
13
15
17
19
```

In [50]:

```
#Extract csv files from files
csv_files = [files[i] for i in range(0, len(files), 2)]
csv_files
```

Out[50]:

```
['CAvideos.csv',
 'DEvideos.csv',
 'FRvideos.csv',
 'GBvideos.csv',
 'INvideos.csv',
 'JPvideos.csv',
 'KRvideos.csv',
 'MXvideos.csv',
 'RUvideos.csv',
 'USvideos.csv']
```

In [51]:

```
full_df = pd.DataFrame()
for file in csv_files:
    current_df = pd.read_csv(path+'/'+file,encoding = 'iso-8859-1', error_bad_l
    current_df['country'] = file.split('.')[0][0:2]
    full_df = pd.concat([full_df, current_df])
```

In [52]:

```
full_df.shape
```

Out[52]:

```
(375942, 17)
```

In [53]:

```
full_df.head()
```

Out[53]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	n1WpP7iowLc	17.14.11	Eminem - Walk On Water (Audio) ft. BeyoncÃ©	EminemVEVO	10	2017-11-10T17:00:03.000Z	Emine
1	0dBIkQ4Mz1M	17.14.11	PLUSH - Bad Unboxing Fan Mail	iDubbbzTV	23	2017-11-13T17:00:00.000Z	plu
2	5qpjK5DgCt4	17.14.11	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	raci
3	d380meD0W0M	17.14.11	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12T18:01:41.000Z	
4	2Vv-BfVoq4g	17.14.11	Ed Sheeran - Perfect (Official Music Video)	Ed Sheeran	10	2017-11-09T11:04:14.000Z	eds

In [54]:

```
full_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 375942 entries, 0 to 40948
Data columns (total 17 columns):
 #   Column                  Non-Null Count   Dtype
---  ------                  --------------   -----
 0   video_id                375942 non-null  object
 1   trending_date           375942 non-null  object
 2   title                   375942 non-null  object
 3   channel_title           375942 non-null  object
 4   category_id             375942 non-null  int64
 5   publish_time            375942 non-null  object
 6   tags                    375942 non-null  object
 7   views                   375942 non-null  int64
 8   likes                   375942 non-null  int64
 9   dislikes                375942 non-null  int64
 10  comment_count           375942 non-null  int64
 11  thumbnail_link          375942 non-null  object
 12  comments_disabled       375942 non-null  bool
 13  ratings_disabled        375942 non-null  bool
 14  video_error_or_removed  375942 non-null  bool
 15  description             356464 non-null  object
 16  country                 375942 non-null  object
dtypes: bool(3), int64(5), object(9)
memory usage: 44.1+ MB
```

In [55]:

```
full_df.describe()
```

Out[55]:

	category_id	views	likes	dislikes	comment_count
count	375942.000000	3.759420e+05	3.759420e+05	3.759420e+05	3.759420e+05
mean	20.232302	1.326568e+06	3.788431e+04	2.126107e+03	4.253775e+03
std	7.132413	7.098568e+06	1.654131e+05	2.248437e+04	2.545876e+04
min	1.000000	1.170000e+02	0.000000e+00	0.000000e+00	0.000000e+00
25%	17.000000	4.697800e+04	6.690000e+02	4.100000e+01	1.090000e+02
50%	23.000000	1.773705e+05	3.446000e+03	1.790000e+02	5.110000e+02
75%	24.000000	6.476792e+05	1.747650e+04	7.490000e+02	2.011000e+03
max	44.000000	4.245389e+08	5.613827e+06	1.944971e+06	1.626501e+06

In [56]:

```
full_df.isnull().sum()
```

Out[56]:

```
video_id                      0
trending_date                 0
title                         0
channel_title                 0
category_id                   0
publish_time                  0
tags                          0
views                         0
likes                         0
dislikes                      0
comment_count                 0
thumbnail_link                0
comments_disabled             0
ratings_disabled              0
video_error_or_removed        0
description               19478
country                       0
dtype: int64
```

In [57]:

```
full_df.columns
```

Out[57]:

```
Index(['video_id', 'trending_date', 'title', 'channel_title', 'categor
y_id',
       'publish_time', 'tags', 'views', 'likes', 'dislikes', 'comment_
count',
       'thumbnail_link', 'comments_disabled', 'ratings_disabled',
       'video_error_or_removed', 'description', 'country'],
      dtype='object')
```

In [58]:

```
full_df['category_id'].unique()
```

Out[58]:

```
array([10, 23, 24, 25, 22, 26,  1, 28, 20, 17, 29, 15, 19,  2, 27, 43,
30,
       44], dtype=int64)
```

In [59]:

```
## Load the file for category
cat = pd.read_csv('category_file.txt',sep=':')
```

In [60]:

```
cat
```

Out[60]:

	Category_id	Category_name
1		Film & Animation
2		Autos & Vehicles
10		Music
15		Pets & Animals
17		Sports
18		Short Movies
19		Travel & Events
20		Gaming
21		Videoblogging
22		People & Blogs
23		Comedy
24		Entertainment
25		News & Politics
26		Howto & Style
27		Education
28		Science & Technology
29		Nonprofits & Activism
30		Movies
31		Anime/Animation
32		Action/Adventure
33		Classics
34		Comedy
35		Documentary
36		Drama
37		Family
38		Foreign
39		Horror
40		Sci-Fi/Fantasy
41		Thriller
42		Shorts
43		Shows
44		Trailers

In [61]:

```
cat.reset_index(inplace = True)
cat.columns = ['category_id', 'category_name']
cat.set_index('category_id', inplace = True)
cat.head()
```

Out[61]:

	category_name
category_id	
1	Film & Animation
2	Autos & Vehicles
10	Music
15	Pets & Animals
17	Sports

In [62]:

```
dct = cat.to_dict()
```

In [63]:

```
dct['category_name']
```

Out[63]:

```
{1: ' Film & Animation',
 2: ' Autos & Vehicles',
 10: ' Music',
 15: ' Pets & Animals',
 17: ' Sports',
 18: ' Short Movies',
 19: ' Travel & Events',
 20: ' Gaming',
 21: ' Videoblogging',
 22: ' People & Blogs',
 23: ' Comedy',
 24: ' Entertainment',
 25: ' News & Politics',
 26: ' Howto & Style',
 27: ' Education',
 28: ' Science & Technology',
 29: ' Nonprofits & Activism',
 30: ' Movies',
 31: ' Anime/Animation',
 32: ' Action/Adventure',
 33: ' Classics',
 34: ' Comedy',
 35: ' Documentary',
 36: ' Drama',
 37: ' Family',
 38: ' Foreign',
 39: ' Horror',
 40: ' Sci-Fi/Fantasy',
 41: ' Thriller',
 42: ' Shorts',
 43: ' Shows',
 44: ' Trailers            '}
```

Add the category data in full_df

In [64]:

```
full_df['category_name'] = full_df['category_id'].map(dct['category_name'])
```

In [65]:

```
full_df.columns
```

Out[65]:

```
Index(['video_id', 'trending_date', 'title', 'channel_title', 'categor
y_id',
       'publish_time', 'tags', 'views', 'likes', 'dislikes', 'comment_
count',
       'thumbnail_link', 'comments_disabled', 'ratings_disabled',
       'video_error_or_removed', 'description', 'country', 'category_n
ame'],
      dtype='object')
```

In [66]:

```
full_df.head()
```

Out[66]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	n1WpP7iowLc	17.14.11	Eminem - Walk On Water (Audio) ft. BeyoncÃ©	EminemVEVO	10	2017-11-10T17:00:03.000Z	Emine
1	0dBIkQ4Mz1M	17.14.11	PLUSH - Bad Unboxing Fan Mail	iDubbbzTV	23	2017-11-13T17:00:00.000Z	pl
2	5qpjK5DgCt4	17.14.11	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	raci
3	d380meD0W0M	17.14.11	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12T18:01:41.000Z	
4	2Vv-BfVoq4g	17.14.11	Ed Sheeran - Perfect (Official Music Video)	Ed Sheeran	10	2017-11-09T11:04:14.000Z	ed

In [67]:

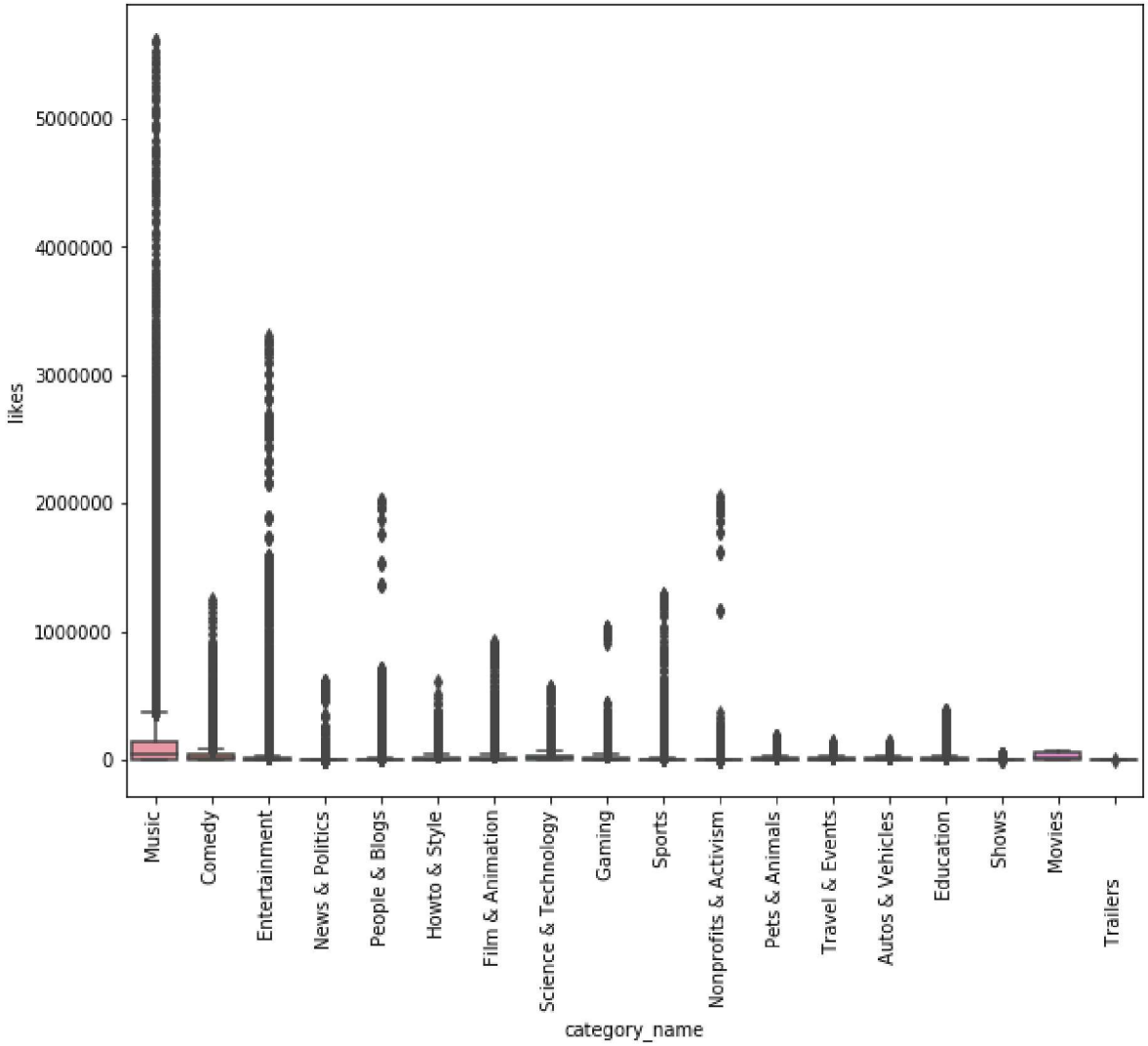
```
full_df.isnull().sum()
```

Out[67]:

```
video_id                    0
trending_date               0
title                       0
channel_title               0
category_id                 0
publish_time                0
tags                        0
views                       0
likes                       0
dislikes                    0
comment_count               0
thumbnail_link              0
comments_disabled           0
ratings_disabled            0
video_error_or_removed      0
description             19478
country                     0
category_name               0
dtype: int64
```

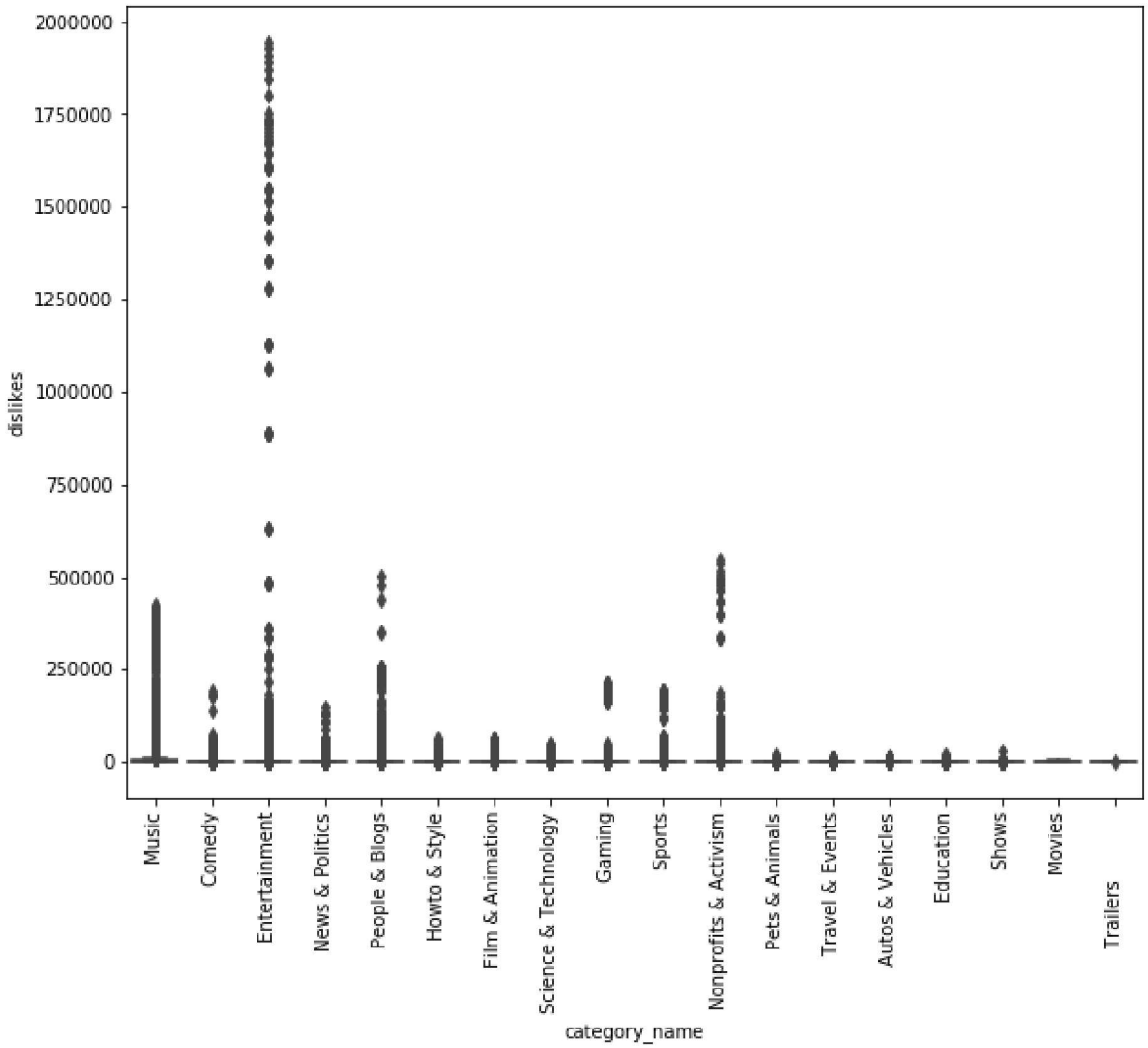
In [68]:

```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'likes', data = full_df)
plt.xticks(rotation = 'vertical');
```



In [69]:

```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'dislikes', data = full_df)
plt.xticks(rotation = 'vertical');
```



In [70]:

```
### Caluclate th rate of likes dislikes and comment count rate
full_df['likes_rate'] = (full_df['likes']/full_df['views'])*100
full_df['dislikes_rate'] = (full_df['dislikes']/full_df['views'])*100
full_df['comment_count_rate'] = (full_df['comment_count']/full_df['views'])*100
```

In [71]:

```
full_df.head()
```

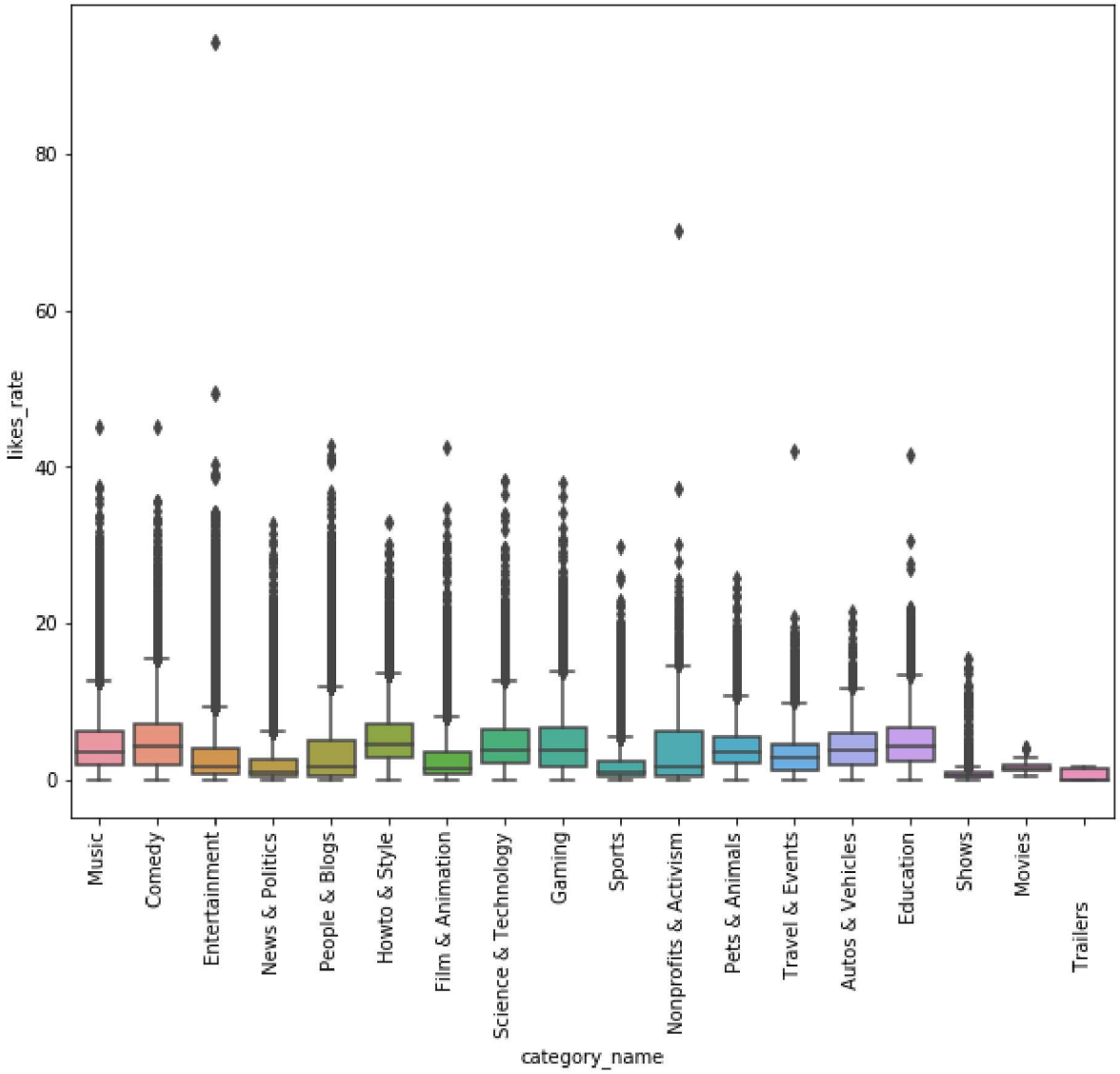
Out[71]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	n1WpP7iowLc	17.14.11	Eminem - Walk On Water (Audio) ft. BeyoncÃ©	EminemVEVO	10	2017-11-10T17:00:03.000Z	Emine
1	0dBIkQ4Mz1M	17.14.11	PLUSH - Bad Unboxing Fan Mail	iDubbbzTV	23	2017-11-13T17:00:00.000Z	plu
2	5qpjK5DgCt4	17.14.11	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	raci
3	d380meD0W0M	17.14.11	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12T18:01:41.000Z	
4	2Vv-BfVoq4g	17.14.11	Ed Sheeran - Perfect (Official Music Video)	Ed Sheeran	10	2017-11-09T11:04:14.000Z	eds

5 rows × 21 columns

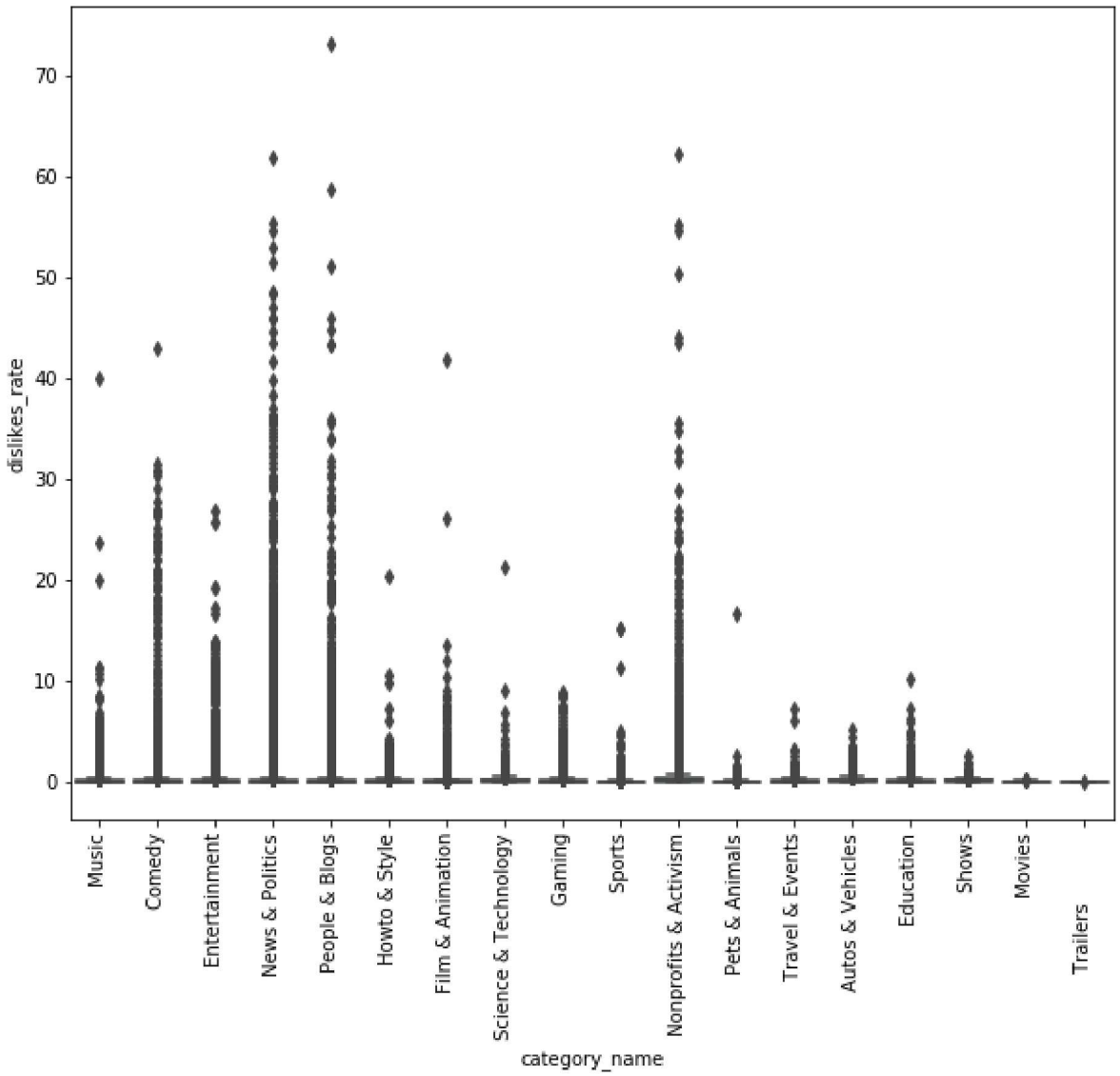
In [72]:

```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'likes_rate', data = full_df)
plt.xticks(rotation = 'vertical');
```



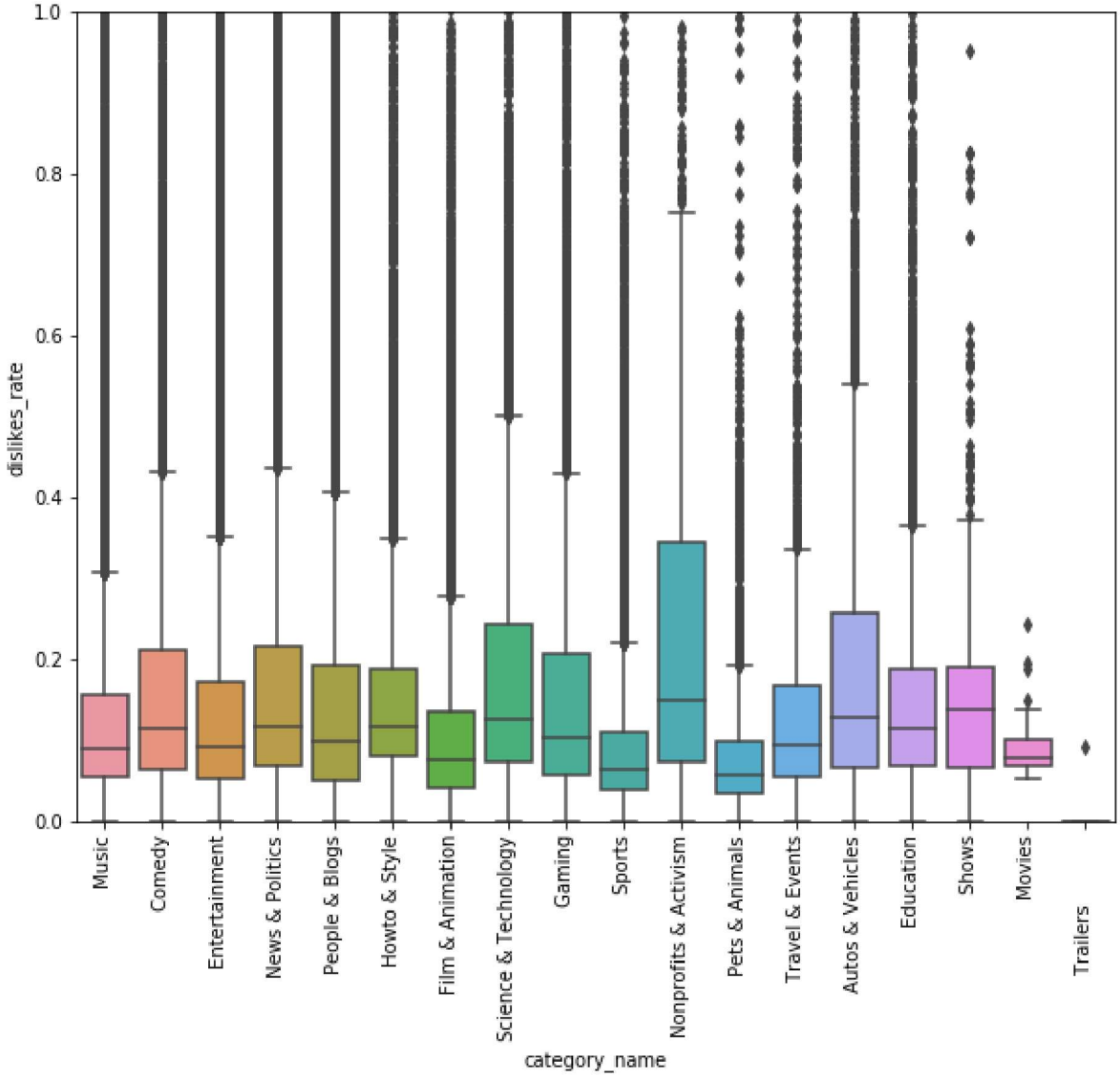
In [73]:

```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'dislikes_rate', data = full_df)
plt.xticks(rotation = 'vertical');
```



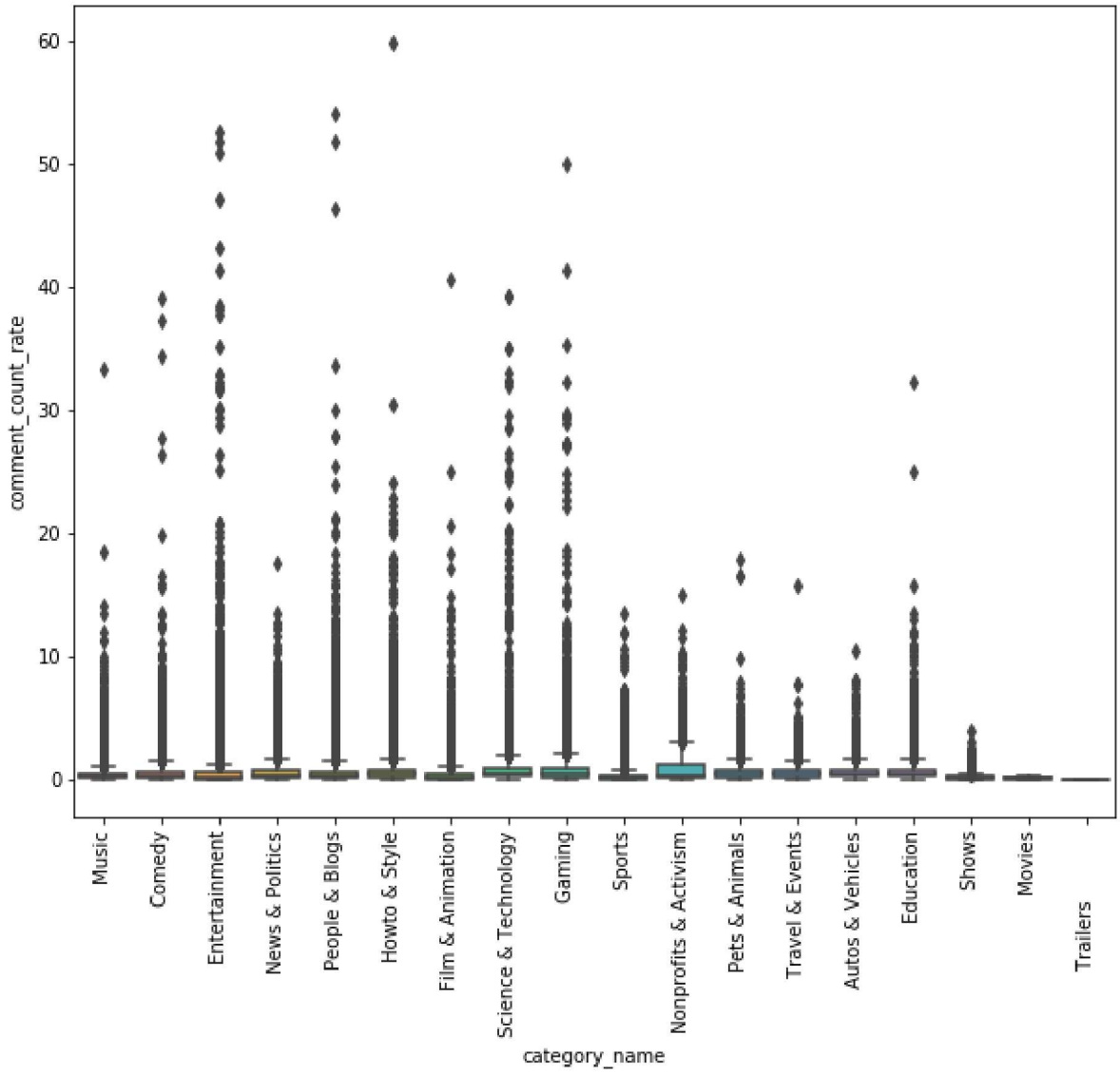
In [74]:

```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'dislikes_rate', data = full_df)
plt.ylim(0,1)
plt.xticks(rotation = 'vertical');
```



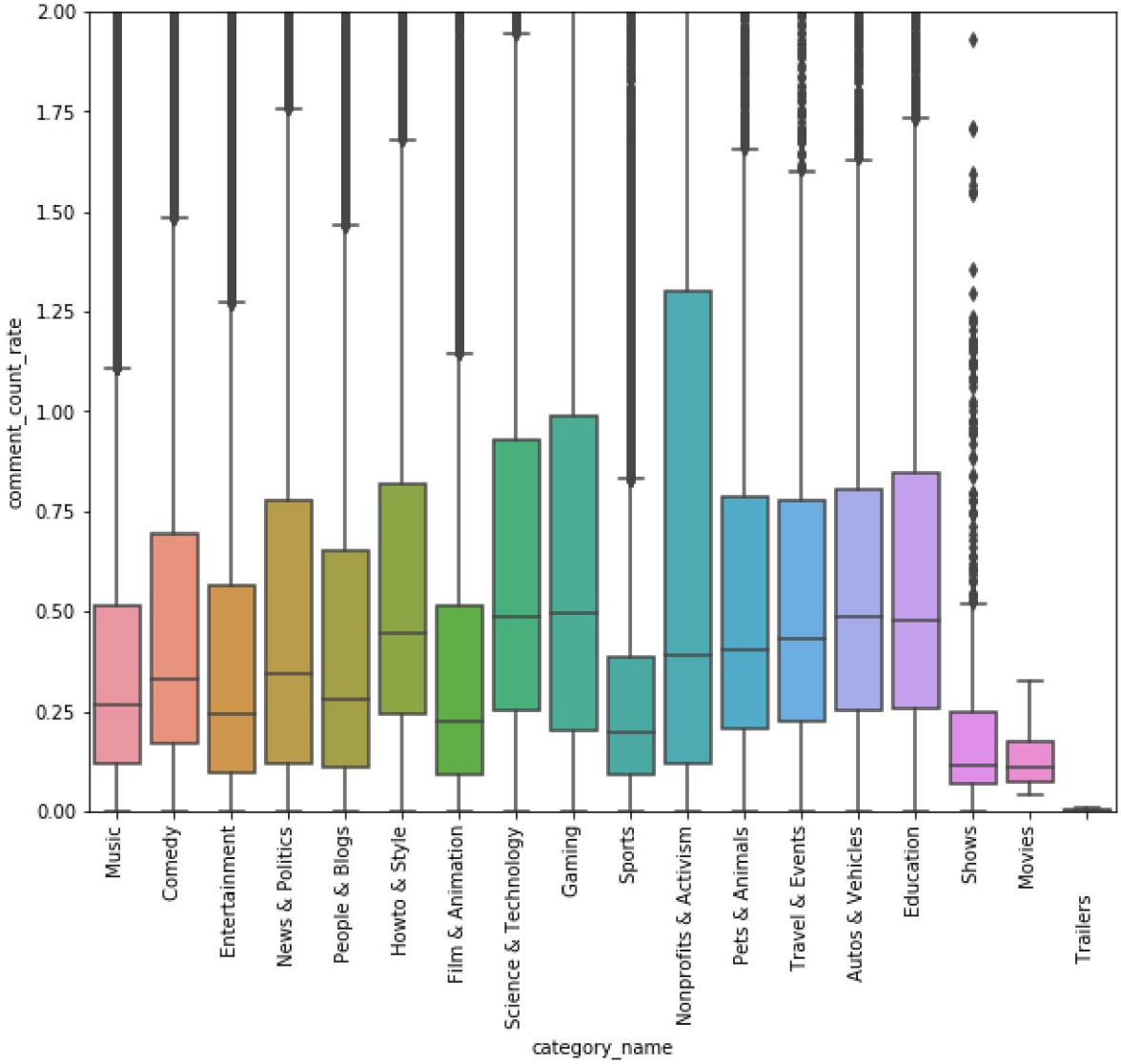
In [75]:

```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'comment_count_rate', data = full_df)
plt.xticks(rotation = 'vertical');
```



In [76]:

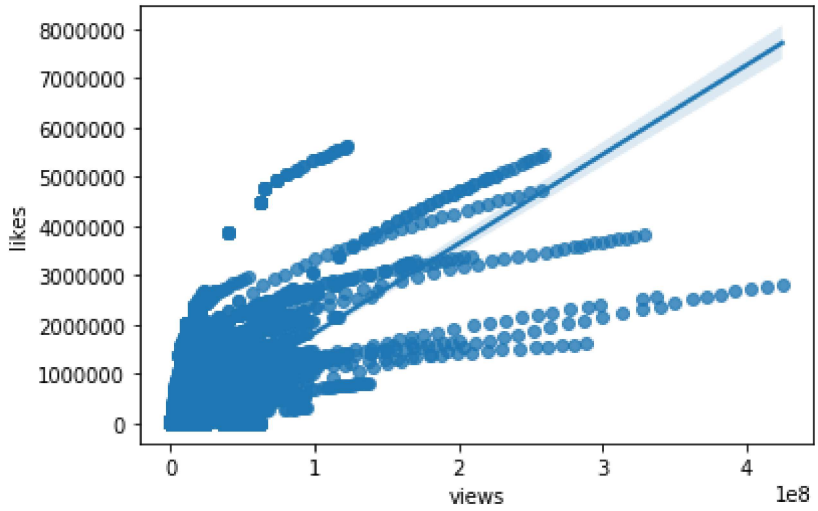
```
plt.figure(figsize = (10, 8))
sns.boxplot(x = 'category_name', y = 'comment_count_rate', data = full_df)
plt.ylim(0,2)
plt.xticks(rotation = 'vertical');
```



Analysing relationship between likes and views

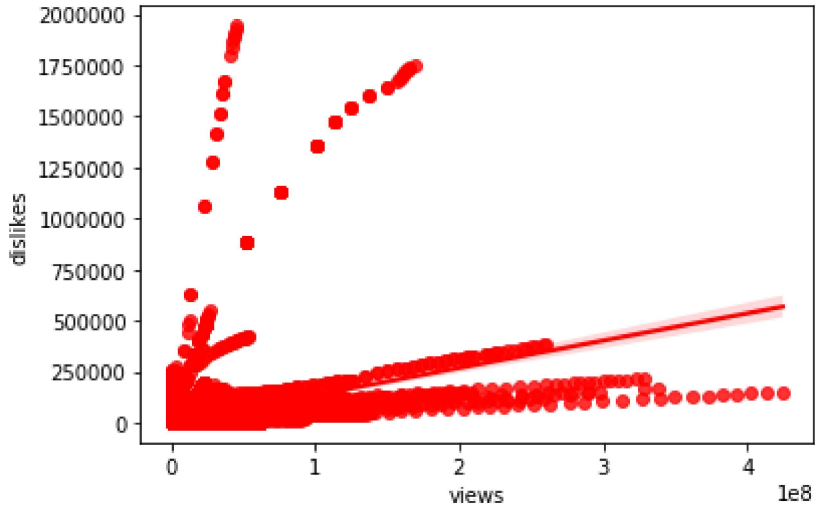
In [77]:

```
sns.regplot(x = 'views', y = 'likes', data = full_df);
```



In [78]:

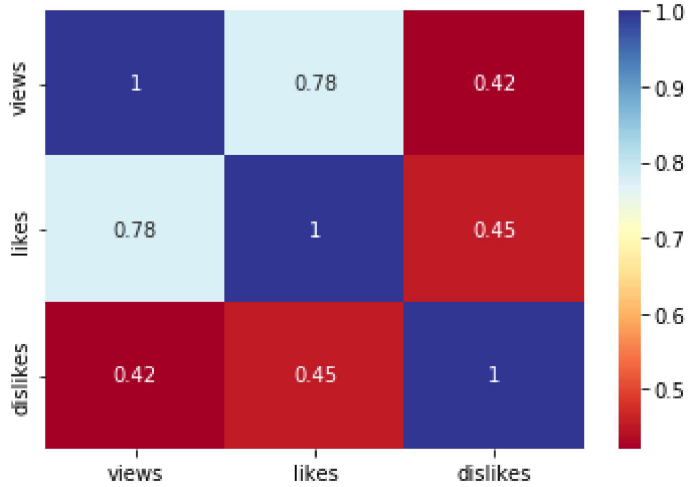
```
## dislikes and views
sns.regplot(x = 'views', y = 'dislikes', data = full_df, color = 'r');
```



Finding co-relation between likes dislikes and views

In [79]:

```
sns.heatmap(full_df[['views', 'likes', 'dislikes']].corr(), cmap = 'RdYlBu', an
```



Analyse the Trending videos

In [80]:

```
channel_df = full_df.groupby('channel_title')['video_id'].count().sort_values(a
```

In [81]:

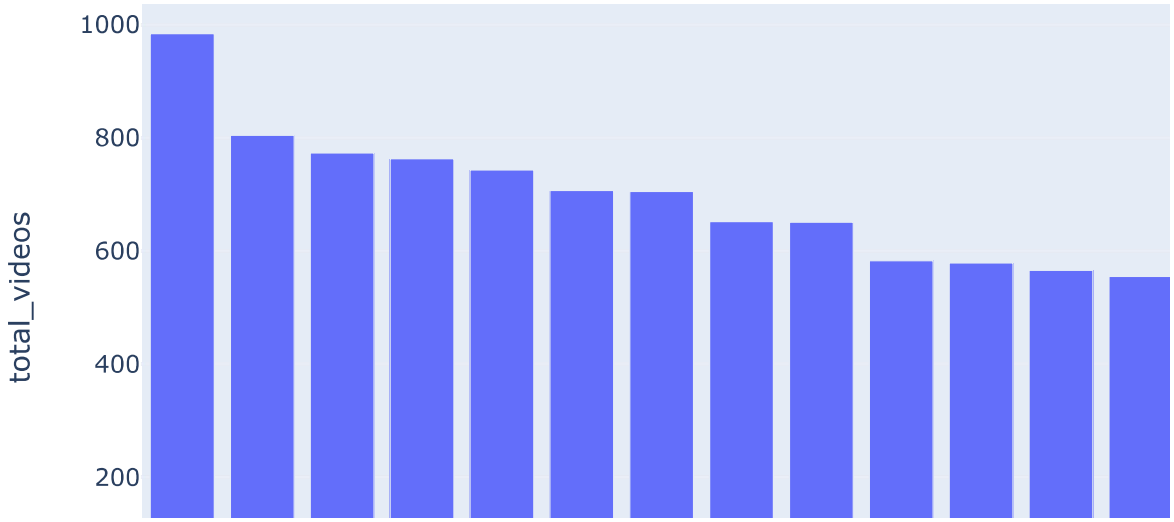
```
channel_df = channel_df.rename(columns = {'video_id': 'total_videos'})
```

In [82]:

```
import plotly.express as px
```

In [83]:

```
px.bar(data_frame = channel_df[0:20], x = 'channel_title', y = 'total_videos')
```



In [ ]:

```
```