

# Exploratory Analysis of Trending YouTube Videos in the US

In this project, we will discover what categories affect the viewrship of the most trending YouTube videos in the US. What we can gain from analyzing these categories would be that we can improve recommending different types of videos to other people based on the majority opinion of what genres of videos are perceived as worthwhile to watch.

```
In [2]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import scipy.stats as stats
#Storing the csv files of the trending youtube videos from the US as a variable
USvideos_data = pd.read_csv("USvideos.csv")
USvideos_data
```

Out[2]:

	video_id	trending_date	title	channel_title	category_id	publi
0	2kyS6SvSYSE	17.14.11	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	13T17:13:
1	1ZAPwfrtAFY	17.14.11	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	13T07:30:
2	5qpjK5DgCt4	17.14.11	Racist Superman   Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	12T19:05:
3	puqaWrEC7tY	17.14.11	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	24	13T11:00:
4	d380meD0W0M	17.14.11	I Dare You: GOING BALD!?	nigahiga	24	12T18:01:
5	gHZ1Qz0KiKM	17.14.11	2 Weeks with iPhone X	iJustine	28	13T19:07:
6	39idVpFF7NQ	17.14.11	Roy Moore & Jeff Sessions Cold Open - SNL	Saturday Night Live	24	12T05:37:
7	nc99ccSXST0	17.14.11	5 Ice Cream Gadgets put to the Test	CrazyRussianHacker	28	12T21:50:
8	jr9QtXwC9vc	17.14.11	The Greatest Showman   Official Trailer 2 [HD]...	20th Century Fox	1	13T14:00:
9	TUmyygCMMGA	17.14.11	Why the rise of the robots won't mean the end ...	Vox	25	13T13:45:
10	9wRQljFNDW8	17.14.11	Dion Lewis' 103-Yd Kick Return TD vs. Denver! ...	NFL	17	13T02:05:
11	VifQIJit6A0	17.14.11	(SPOILERS) 'Shiva Saves the Day' Talked About ...	amc	24	13T03:00:
12	5E4ZBSInqUU	17.14.11	Marshmello - Blocks (Official Music Video)	marshmello	10	13T17:00:
13	GgVmn66oK_A	17.14.11	Which Countries Are About To Collapse?	NowThis World	25	12T14:00:

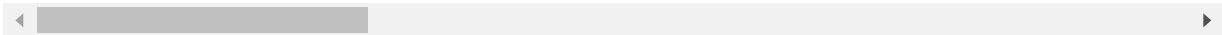
	video_id	trending_date	title	channel_title	category_id	publi:
14	TaTleo4cOs8	17.14.11	SHOPPING FOR NEW FISH!!!	The king of DIY	15	12T18:30:
15	kgaO45SyaO4	17.14.11	The New SpotMini	BostonDynamics	28	13T20:09:
16	ZAQs-ctOqXQ	17.14.11	One Change That Would Make Pacific Rim a Classic	Cracked	23	12T17:00:
17	YVfyYrEmzgM	17.14.11	How does your body know you're full? - Hilary ...	TED-Ed	27	13T16:00:
18	eNSN6qet1kE	17.14.11	HomeMade Electric Airplane	PeterSripol	28	13T15:30:
19	B5HORANmzHw	17.14.11	Founding An Inbreeding-Free Space Colony	SciShow	27	12T22:00:
20	vU14JY3x81A	17.14.11	How Can You Control Your Dreams?	Life Noggin	27	13T14:00:
21	6VhU_T463sU	17.14.11	The Making of Hela's Headdress from Thor: Ragn...	Tested	28	12T15:00:
22	_-aDHxoblR4	17.14.11	Is It Dangerous To Talk To A Camera While Driv...	Tom Scott	27	13T16:00:
23	JBZTZZAcFTw	17.14.11	What \$4,800 Will Get You In NYC   Sweet Digs H...	Refinery29	26	12T16:00:
24	IZ68j2J_GOM	17.14.11	Using Other People's Showers	Gus Johnson	23	13T14:44:
25	dRpNZV18N_g	17.14.11	SPAGHETTI BURRITO VS SPAGHETTI BURRITO	HellthyJunkFood	24	12T14:00:
26	fcVjitaM3LY	17.14.11	78557 and Proth Primes - Numberphile	Numberphile	28	13T12:13:
27	qeWvgZLz9yU	17.14.11	A Smart... MUG?! - Take apart a Heated Thermos!	JerryRigEverything	26	13T16:00:
28	ilxy3JN3-jc	17.14.11	LeBron James admits he was ripping Phil Jackso...	Cleveland Cavaliers on cleveland.com	25	13T15:42:

	video_id	trending_date	title	channel_title	category_id	publi:
29	n30k5CwLhS4	17.14.11	Nick Andopolis: Drummer	FaeryInLoveInc	1	29T17:03:2
...	...	...	...	...	...	...
40919	vDyYMcf500	18.14.06	The History of Fortnite Battle Royale - Did Yo...	DidYouKnowGaming?	20	24T19:00:2
40920	3Q2j5ApzSqs	18.14.06	Christina Aguilera - Fall In Line (Official Vi...	CAguileraVEVO	10	23T17:00:2
40921	GfxNGjfSKRY	18.14.06	James Bay - Delicate (Taylor Swift cover) in t...	BBCRadio1VEVO	10	24T17:00:2
40922	amtC28yfYCM	18.14.06	Mindy Kaling Is Mad She Wasn't Invited to the ...	The Tonight Show Starring Jimmy Fallon	23	24T08:00:2
40923	9NC2saE5MbQ	18.14.06	Camels vs. Cactus!!! جمل	camelsandfriends	15	23T13:33:2
40924	XdNOI-q70q4	18.14.06	GIANT Bowl of Lucky Charms CHALLENGE (5,000+ C...	Matt Stonie	24	23T00:15:2
40925	QgOXIEhHU1Y	18.14.06	Diplo, French Montana & Lil Pump ft. Zhavia - ...	Diplo	10	21T14:12:2
40926	SQsPvrev_bQ	18.14.06	435	Tyler, The Creator	27	22T15:20:2
40927	_1LdMWINYS4	18.14.06	That Time It Rained for Two Million Years	PBS Eons	28	22T21:00:2
40928	AFbu21AGSho	18.14.06	Watch a Hercules Beetle Metamorphose Before Yo...	Nat Geo WILD	15	22T12:00:2
40929	hHaUQh6Gx-Q	18.14.06	Mustard, Nick Jonas - Anywhere	MustardVEVO	10	22T12:00:2
40930	wl89nVn6LHk	18.14.06	Maddie Poppe Wins American Idol 2018 - Finale ...	American Idol	24	22T04:08:2
40931	oLDbo545aKQ	18.14.06	Terrible Magicians   Rudy Mancuso & Juanpa Zurita	Rudy Mancuso	10	21T21:00:2

	video_id	trending_date	title	channel_title	category_id	publi:
40932	tiF9SzzzX_o	18.14.06	The Voice 2018 Brynn Cartelli - Finale: Skyfall	The Voice	24	22T02:34: <sup>2</sup>
40933	Gs26bZTRkdU	18.14.06	8 Survival Myths That Will Definitely Make Thi...	SciShow	27	20T21:00: <sup>2</sup>
40934	Qcj15vHJTtk	18.14.06	Royal Wedding - SNL	Saturday Night Live	24	20T04:58: <sup>2</sup>
40935	2in8XqiElwc	18.14.06	Nicki Minaj - Chun-Li (Live on SNL / 2018)	NickiMinajAtVEVO	10	20T07:53: <sup>2</sup>
40936	Xr2rgT9uEnA	18.14.06	LIE DETECTOR TEST WITH MY GIRLFRIEND!	miniminter	20	20T18:00: <sup>2</sup>
40937	v7H_Or9Nr5I	18.14.06	Lucas the Spider - Giant Spider	Lucas the Spider	1	19T14:52: <sup>2</sup>
40938	n_W54baizX8	18.14.06	Daddy Yankee - Hielo (Video Oficial)	Daddy Yankee	10	18T14:00: <sup>2</sup>
40939	pcJo0tlWybY	18.14.06	SZA - Garden (Say It Like Dat) (Official Video)	SZAVEVO	10	18T14:00: <sup>2</sup>
40940	_QWZvU7VCn8	18.14.06	Brad Pitt Bid \$120k For A Night With Emilia Cl...	The Graham Norton Show	24	18T17:13: <sup>2</sup>
40941	7UoP9ABJXGE	18.14.06	Dan + Shay - Speechless (Wedding Video)	Dan And Shay	10	18T04:04: <sup>2</sup>
40942	ju_inUnrLc4	18.14.06	Fifth Harmony - Don't Say You Love Me	FifthHarmonyVEVO	10	18T07:00: <sup>2</sup>
40943	1PhPYr_9zRY	18.14.06	BTS Plays With Puppies While Answering Fan Que...	BuzzFeed Celeb	22	18T16:39: <sup>2</sup>
40944	BZt0qjTWNhw	18.14.06	The Cat Who Caught the Laser	AaronsAnimals	15	18T13:00: <sup>2</sup>
40945	1h7KV2sjUWY	18.14.06	True Facts : Ant Mutualism	zefrank1	22	18T01:00: <sup>2</sup>

	video_id	trending_date	title	channel_title	category_id	publi:
40946	D6Oy4LfoqsU	18.14.06	I GAVE SAFIYA NYGAARD A PERFECT HAIR MAKEOVER ...	Brad Mondo	24	18T17:34: <sup>2</sup>
40947	oV0zkMe1K8s	18.14.06	How Black Panther Should Have Ended	How It Should Have Ended	1	17T17:00: <sup>2</sup>
40948	ooyjaVdt-jA	18.14.06	Official Call of Duty®: Black Ops 4 — Multipla...	Call of Duty	20	17T17:09: <sup>2</sup>

40949 rows × 16 columns



```
In [3]: Videos_In_US = USvideos_data.drop_duplicates(subset = "title", keep = "first")
```

```
In [4]: #Organizing the most trending US Videos by views  
Videos_In_US.sort_values(by = "views", ascending = False)
```



Out[4]:

	video_id	trending_date	title	channel_title	category_id	publi
23824	#NAME?	18.15.03	Maluma - El Préstamo (Official Video)	MalumaVEVO	10	09T11:00
35550	7C2z4GqqS5E	18.19.05	BTS (방탄소년단) 'FAKE LOVE' Official MV	ibighit	10	18T09:00
28605	i0p1bmr0EmE	18.14.04	TWICE What is Love? M/V	jypentertainment	10	09T08:59
3200	6ZfuNTqbHE8	17.30.11	Marvel Studios' Avengers: Infinity War Official...	Marvel Entertainment	24	29T13:26
70	2Vv-BfVoq4g	17.14.11	Ed Sheeran - Perfect (Official Music Video)	Ed Sheeran	10	09T11:04
33351	VYOjWnS4cMY	18.08.05	Childish Gambino - This Is America (Official V...	ChildishGambinoVEVO	10	06T04:00
30750	u9Mv98Gr5pY	18.25.04	VENOM - Official Trailer (HD)	Sony Pictures Entertainment	24	24T03:45
4600	FlsCjmMhFmw	17.07.12	YouTube Rewind: The Shape of 2017   #YouTubeRe...	YouTube Spotlight	24	06T17:58
28624	U9BwWKXjVal	18.14.04	Drake - Nice For What	DrakeVEVO	10	07T02:46
38161	1J76wN0TPI4	18.01.06	Sanju   Official Trailer   Ranbir Kapoor   Raj...	FoxStarHindi	24	30T07:51
40340	MAjY8mCTXWk	18.11.06	周杰倫 Jay Chou 【不愛我就拉倒】 If You Don't Love Me, It's...	杰威爾音樂 JVR Music	10	14T15:59
16181	BhIEIO0vaBE	18.05.02	To Our Daughter	Kylie Jenner	22	04T20:27
6145	9v_rtaye2yY	17.14.12	Migos, Nicki Minaj, Cardi B - MotorSport (Offi...	MigosVEVO	10	08T02:12
24156	QwievZ1Tx-8	18.17.03	Marvel Studios' Avengers: Infinity War - Offic...	Marvel Entertainment	24	16T13:02

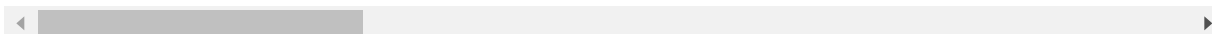
	video_id	trending_date	title	channel_title	category_id	publi
30752	rRr1qiJR5Xk	18.25.04	Sanju   Official Teaser   Ranbir Kapoor   Rajk...	FoxStarHindi	24	24T07:58
5832	rRzxEiBLQCA	17.13.12	TWICE Heart Shaker M/V	jypentertainment	10	11T08:59
5001	vn9mMeWcgoM	17.09.12	Jurassic World: Fallen Kingdom - Official Trai...	Universal Pictures	24	08T01:44
32	n1WpP7iowLc	17.14.11	Eminem - Walk On Water (Audio) ft. Beyoncé	EminemVEVO	10	10T17:00
39149	J2HytHu5VBI	18.06.06	we broke up	David Dobrik	22	05T04:54
29951	ffxKSjUwKdU	18.21.04	Ariana Grande - No Tears Left To Cry	ArianaGrandeVevo	10	20T04:00
35349	yDiXQI7grPQ	18.18.05	Do You Hear Yanny or Laurel? (SOLVED with SCIE...	AsapSCIENCE	28	16T18:16
23362	tCXGJQYZ9JA	18.13.03	Taylor Swift - Delicate	TaylorSwiftVEVO	10	12T01:15
23797	sS0LCjOilhc	18.15.03	GOT7 Look M/V	jypentertainment	10	12T09:00
19376	V5cOvyDpWfM	18.21.02	Fergie Performs The U.S. National Anthem / 201...	MLG Highlights	17	19T01:37
11600	dfnCAmr569k	18.13.01	Taylor Swift - End Game ft. Ed Sheeran, Future	TaylorSwiftVEVO	10	12T05:00
2201	kTlv5_Bs8aw	17.25.11	BTS (방탄소년단) 'MIC Drop (Steve Aoki Remix)' Offi...	ibighit	10	24T09:00
16825	_5d-sQ7Fh5M	18.08.02	LOGAN PAUL IS BACK!	Logan Paul Vlogs	24	04T22:02
10000	QwZT7T-TXT0	18.03.01	So Sorry.	Logan Paul Vlogs	24	02T16:42
31297	JqfuKsoEEms	18.27.04	Hotel Artemis   Official Trailer [HD]   Global...	Global Road Entertainment	24	16T12:59
28598	hYirFqEc8Tg	18.14.04	Crossbow Trick Shots   Dude Perfect	Dude Perfect	17	09T21:55
...	...	...	...	...	...	...

	video_id	trending_date	title	channel_title	category_id	publi
5490	r3d2alzgjKc	17.11.12	exixe clock in action	dekuNukem	28	04T14:43
6493	P4VipvC54W4	17.16.12	coin cell challenge	Michael Rigsby	22	06T00:56
6587	OmM425PFd3Y	17.16.12	How Noah Galvin Makes Evan Hansen His Own	BUILD Series	24	12T22:51
935	7xhxjcejONk	17.18.11	Star Wars & littleBits Droid Inventor Kit: Mov...	littleBits Electronics	28	15T16:18
6822	plnzNgtvvJo	17.18.12	You'll Shoot Your Eye Out Performance   A CHRI...	FOX	24	18T04:03
3354	0devsSCkYRY	17.30.11	The Algorithm That Will Keep You Buying On Cyb...	NBC News	25	27T14:39
536	KLZI_sxSN_g	17.16.11	WWSB Channel 7: Sarasota Police stepping up ...	Sarasota Police Department	25	08T19:23
3929	BGtsTNCMrQI	17.03.12	Test footage of my raspberry pi camera in the ...	Facelesstech	20	25T19:26
4718	I_puTos3yVs	17.07.12	After the Show Show: National Cookie Day	Fox News	25	04T15:59
15886	3rhw4KgcvFM	18.03.02	First Responders Arrive To The Collapsed Floor...	9-1-1 on FOX	24	01T02:00
14735	mWaY32HWjKE	18.28.01	QB Luke Falk: Need to show you're a fearless p...	Cleveland Browns	17	24T18:00
18843	ICT0OaVqIQE	18.18.02	Jeffrey Tambor Fired From 'Transparent' Follow...	CBS Los Angeles	25	16T02:26
541	QKwgif8OW1w	17.16.11	Vostok Brompton Beach Ride	Vostok.bike	19	21T15:12
4933	GF_0i9WxA_s	17.08.12	Obama Answers Akkai Padmashali (Transgender Ac...	taalk com	26	04T10:46

	video_id	trending_date	title	channel_title	category_id	publi
1917	2a52cBN9qOA	17.23.11	Additional Remains Of Miami Gardens Soldier Re...	CBS Miami	25	21T17:26
6344	B7B6x2bHcUs	17.15.12	Get to know Doug Jones, Alabama's newest Senator	Newsy	25	13T03:58
10704	Wwyaow1wWg	18.06.01	Inventing The Wheel	J Gasser	24	08T22:27
13145	jiP82WVx6mM	18.20.01	The author of the 5:2 diet explains why eating...	Business Insider UK	28	17T14:23
42	NZFhMSgbKKM	17.14.11	Dennis Smith Jr. and LeBron James go back and ...	Ben Rohrbach	17	13T15:11
10902	s_FAjI51LPU	18.07.01	Gas Mask Scene   Kong: Skull Island (2017)	Adam Whitley	1	14T20:33
1114	g3VgrgV3kFk	17.19.11	John Thrasher: Jimbo's here forever	Single Shot	17	16T22:50
11710	TKMXw1YI5S4	18.13.01	UR EEOC Complainants Press Conference (5pm Jan...	University of Rochester EEOC Complainants	22	11T22:55
12961	tKX8nUCSBJM	18.19.01	Bannon Arrives to Testify on Capitol Hill	Associated Press	25	16T15:16
14816	S_HixQBIVH0	18.29.01	John Legend And Tony Bennett Sing 'New York, N...	CBS	24	29T02:33
11103	JNv4w6DFoYs	18.08.01	OjO Commuter Scooter®- Light Electric Vehicle ...	OjO Commuter Scooter by OjO Electric	19	10T19:18
160	qg0GdM60syl	17.14.11	Huffy Metaloid Bicycle Commercial 1997	90s Commercials	27	31T21:46
12716	zeQaJGkFyqQ	18.18.01	Raw: 3 South Carolina Deputies, 1 Officer Shot	Associated Press	25	16T12:16

	video_id	trending_date	title	channel_title	category_id	publi
546	#NAME?	17.16.11	Coach Taggart Monday Presser Ahead of Arizona	GoDucksdotcom	17	13T20:41
14531	dQMZLXaa1L8	18.27.01	Artwork Forge	Palo Alto Online	17	10T23:53
14335	y6KYFcta4SE	18.26.01	1 dead, others injured after Ky. school shooting	Newsy	25	23T15:30

6455 rows × 16 columns



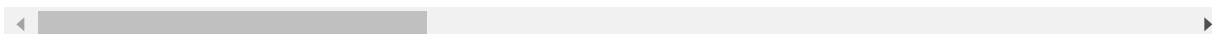
We are now going to analyze the top 10 most viewed YouTube Videos in the US and we're going to see what common group(s) of genres have put these videos in a very high percentile in terms of viewership.

```
In [5]: #Top 10 Most Watched Videos from the 2017-2018 Period
Videos_In_US_Top_10 = Videos_In_US.nlargest(10, "views")
```

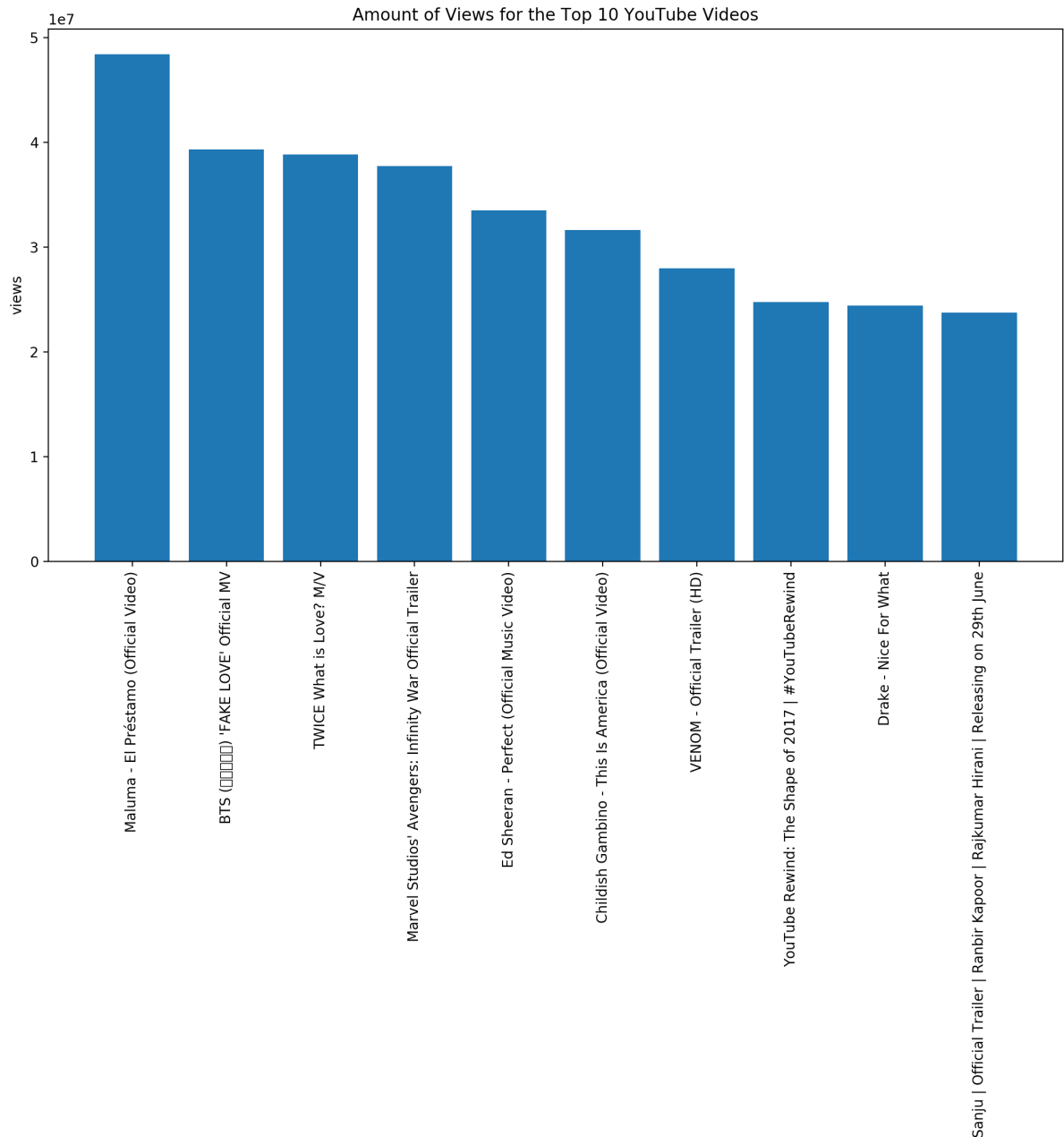
```
In [6]: Videos_In_US_Top_10.head()
```

```
Out[6]:
```

	video_id	trending_date	title	channel_title	category_id	publish_time
23824	#NAME?	18.15.03	Maluma - EI Préstamo (Official Video)	MalumaVEVO	10	2018-03- 09T11:00:01.000Z
35550	7C2z4GqqS5E	18.19.05	BTS (방 탄소년단) 'FAKE LOVE' Official MV	ibighit	10	2018-05- 18T09:00:02.000Z
28605	i0p1bmr0EmE	18.14.04	TWICE What is Love? M/V	jypentertainment	10	2018-04- 09T08:59:51.000Z
3200	6ZfuNTqbHE8	17.30.11	Marvel Studios' Avengers: Infinity War Officia...	Marvel Entertainment	24	2017-11- 29T13:26:24.000Z
70	2Vv-BfVoq4g	17.14.11	Ed Sheeran - Perfect (Official Music Video)	Ed Sheeran	10	2017-11- 09T11:04:14.000Z



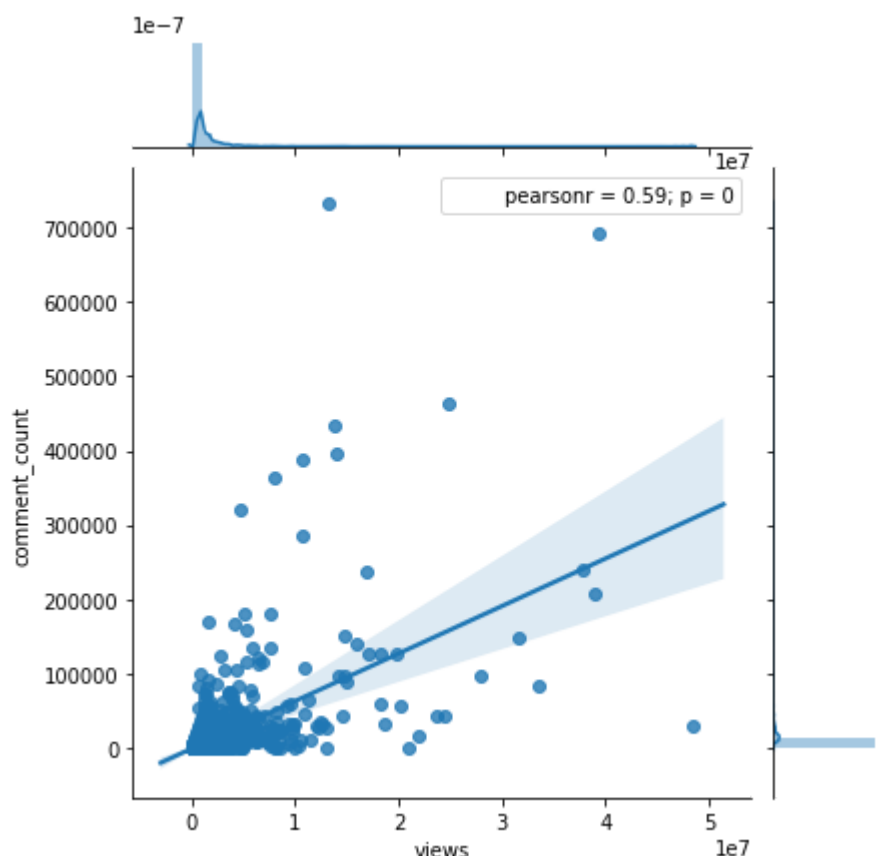
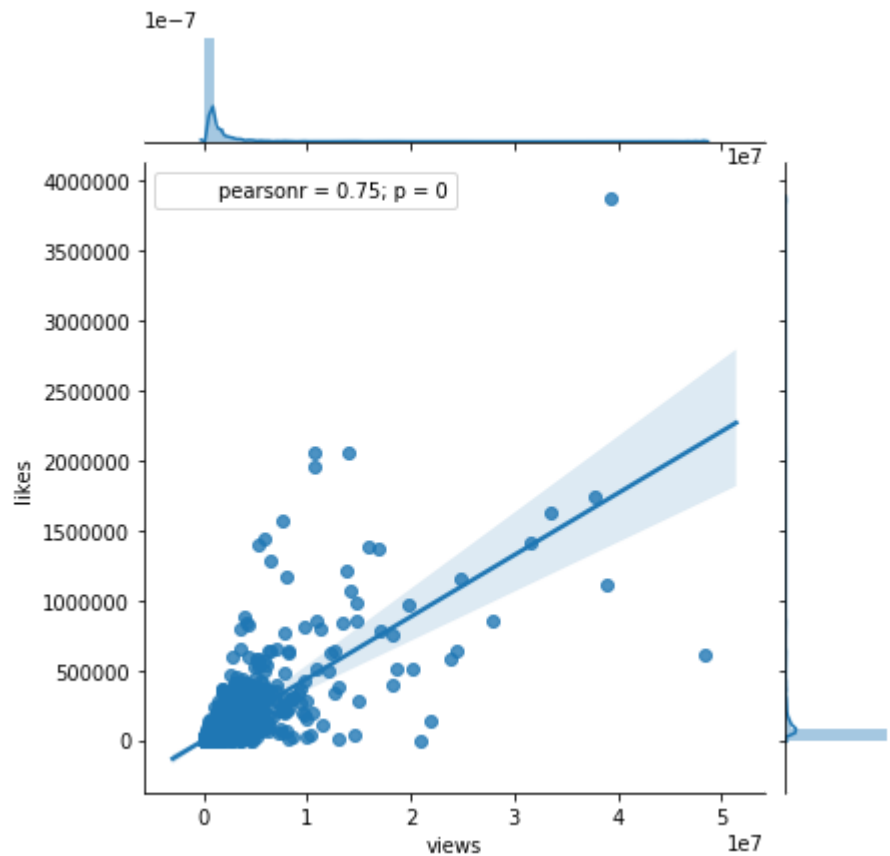
```
In [12]: #Plot of the Number of Views from the Top 10 Most Watched Videos from the 2017
-2018 Period
plt.figure(figsize=(13, 7), dpi=200)
plt.bar(Videos_In_US_Top_10["title"],Videos_In_US_Top_10["views"])
plt.xticks(rotation=90)
plt.ylabel("views")
plt.title("Amount of Views for the Top 10 YouTube Videos")
plt.show()
```



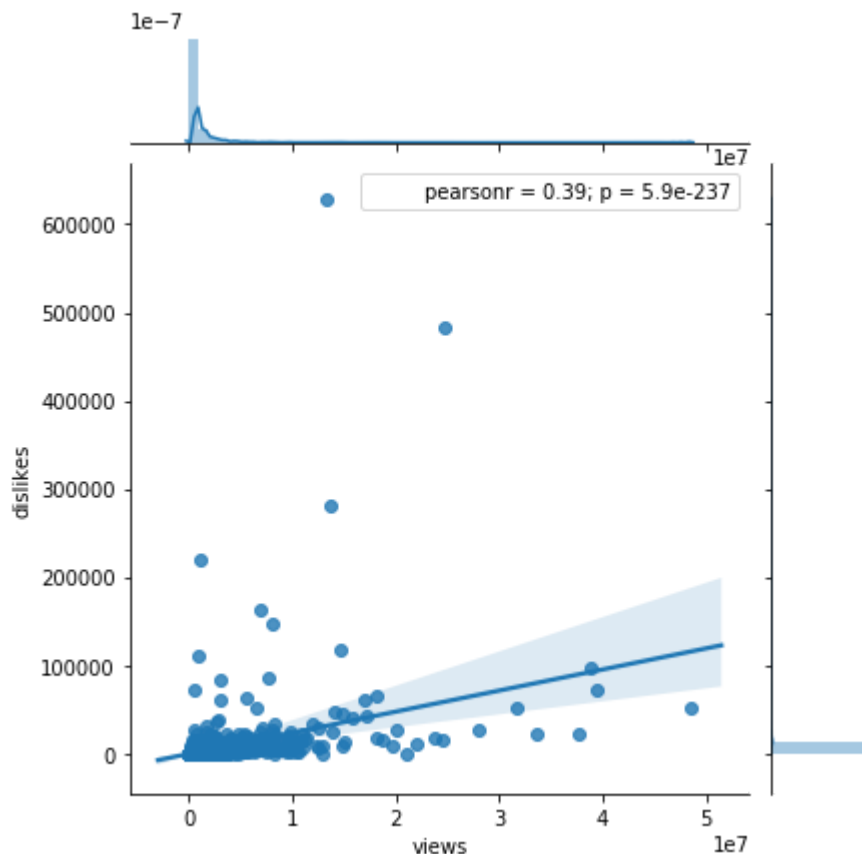
From the bar graph from above, we can see that the top 10 most viewed videos in the US tend to be in the genres of music videos and superhero films (for example, "Marvel Studios' Avengers: Infinity War Official Trailer" and "VENOM - Official Trailer(HD)"). The only videos that seem to be the exception of the rule in this trend would be "YouTube Rewind: The Shape of 2017|#YouTubeRewind" and "Sanju|Official|Trailer|Ranbir Kapoor|Rajkumar Hirani|Releasing on 29th June" since Youtube's 2017 Rewind is simply a compilation of popular YouTube channels/videos from that year and the Sanju film is a biographical film about the actor Sanjay Dutt.

```
In [9]: #Observing the differences of the number of Likes, dislikes, and comments of t  
rending videos in the US  
number_of_likes = sns.jointplot(x = "views", y = "likes", data = Videos_In_US,  
kind = "reg")  
number_of_likes.annotate(stats.pearsonr)  
number_of_comments = sns.jointplot(x = "views", y = "comment_count", data = Vi  
deos_In_US, kind = "reg")  
number_of_comments.annotate(stats.pearsonr)  
number_of_dislikes = sns.jointplot(x = "views", y = "dislikes", data = Videos_  
In_US, kind = "reg")  
number_of_dislikes.annotate(stats.pearsonr)  
plt.figure(figsize = (16, 9), dpi = 200)  
plt.show()
```

```
c:\users\ugoch\appdata\local\programs\python\python37-32\lib\site-packages\seaborn\axisgrid.py:1847: UserWarning: JointGrid annotation is deprecated and will be removed in a future release.  
warnings.warn(UserWarning(msg))
```







<Figure size 3200x1800 with 0 Axes>

For the three graphs, we can see that the one thing that they have in common is that they all have fairly weak positive linear relationships since a fair amount of points tend to be scattered away from the line of best fit, but a large portion of the points are very close to the line of best fit. However, the differences that I have seen in each graph would be that the graph that focuses on the number of likes in each trending video shows a trend in which as the videos increase in the amount of views that they have, there's an increase in the amount of likes that it will have (we really start to see this consistent level of growth around 5,000,000 views, reaches it's peak at 40,000,000 views with 4,000,000 likes, and then declines right after that); the graph with the number of comments has a similar style of growth as the graph with the number of likes, but the difference between the two is that the graph with the number of comments has a much larger dispersion of data points from the best line of fit at around 2,000,000 views and reaches it's max comment count at 15,000,000 views with around 720,000 comments; the graph with the number of dislikes is the most different out of the three graphs in which it reaches it's maximum peak on its perspective y axis very early at 15,000,000 views with 600,000 dislikes and after that point, there's a consistent increase in dislikes as the views increase, but the majority of those dislikes are under 100,000 dislikes. Based on these observations, we can safely conclude that as the more popular a video gets in viewership, the more likes and commentary that the video will receive; and as the least popular a video gets in viewership, the more dislikes that the video will receive.