

# mainflow2

September 28, 2023

```
[1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from scipy import stats
```

```
[2]: df=pd.read_csv('INDIAvi.csv')
df
```

```
[2]:      video_id trending_date \
0      kzwfHumJyYc      17.14.11
1      zUZ1z7FwLc8      17.14.11
2      10L1hZ9qa58      17.14.11
3      N1vE8iiEg64      17.14.11
4      kJzGHOPVQHQ      17.14.11
...      ...      ...
37347  iNHecA3PJCo      18.14.06
37348  dpPmPbhcsLM      18.14.06
37349  mV6aztP58f8      18.14.06
37350  qxqDNP1bDEw      18.14.06
37351  wERgpPK44w0      18.14.06
```

```
      title      channel_title \
0  Sharry Mann: Cute Munda ( Song Teaser) | Parmi...  Lokdhun Punjabi
1      ,      ,      ...  HJ NEWS
2  Stylish Star Allu Arjun @ ChaySam Wedding Rece...  TFPC
3      Eruma Saani | Tamil vs English  Eruma Saani
4  why Samantha became EMOTIONAL @ Samantha naga ...  Filmlylooks
...      ...      ...
37347  -      | ...  RDC Rajasthani
37348      Seetha | Flowers | Ep# 364  Flowers TV
37349  Bhramanam I Episode 87 - 12 June 2018 I Mazhav...  Mazhavil Manorama
37350  Nua Bohu | Full Ep 285 | 13th June 2018 | Odia...  Tarang TV
37351  Ee Nagarani Emaindi Trailer | Tharun Bhascke...  Suresh Productions
```

```
      category_id      publish_time \
0      1  2017-11-12T12:20:39.000Z
```

1	25	2017-11-13T05:43:56.000Z
2	24	2017-11-12T15:48:08.000Z
3	23	2017-11-12T07:08:48.000Z
4	24	2017-11-13T01:14:16.000Z
...	...	...
37347	23	2018-06-13T08:01:11.000Z
37348	24	2018-06-13T11:30:04.000Z
37349	24	2018-06-13T05:00:02.000Z
37350	24	2018-06-13T15:07:49.000Z
37351	24	2018-06-10T04:29:54.000Z

		tags	views	likes	\
0	sharry mann "sharry mann new song" "sharry man...		1096327	33966	
1	"..."	590101	735		
2	Stylish Star Allu Arjun @ ChaySam Wedding Rece...		473988	2011	
3	Eruma Saani "Tamil Comedy Videos" "Films" "Mov...		1242680	70353	
4	Filmylooks "latest news" "telugu movies" "telu...		464015	492	
...	...	...	...	...	
37347	twinkle vaishnav comedy "twinkle vaishnav" "tw...		214378	3291	
37348	flowers serials "actress" "malayalam serials" "...		406828	1726	
37349	mazhavil manorama "bhramanam full episode" "gt...		386319	1216	
37350	tarang "tarang tv" "tarang tv online" "tarang ...		130263	698	
37351	Ee Nagarani Emaindi "Ee Nagarani Emaindi T...		1278249	22466	

	dislikes	comment_count	\
0	798	882	
1	904	0	
2	243	149	
3	1624	2684	
4	293	66	
...	...	...	
37347	404	196	
37348	478	1428	
37349	453	697	
37350	115	65	
37351	1609	1205	

	thumbnail_link	comments_disabled	\
0	https://i.ytimg.com/vi/kzwfHumJyYc/default.jpg	False	
1	https://i.ytimg.com/vi/zUZ1z7FwLc8/default.jpg	True	
2	https://i.ytimg.com/vi/10L1hZ9qa58/default.jpg	False	
3	https://i.ytimg.com/vi/N1vE8iiEg64/default.jpg	False	
4	https://i.ytimg.com/vi/kJzGH0PVQHQ/default.jpg	False	
...	...	...	
37347	https://i.ytimg.com/vi/iNHecA3PJCo/default.jpg	False	
37348	https://i.ytimg.com/vi/dpPmPbhcsLM/default.jpg	False	
37349	https://i.ytimg.com/vi/mV6aztP58f8/default.jpg	False	

```
37350 https://i.ytimg.com/vi/qxqDNP1bDEw/default.jpg False
37351 https://i.ytimg.com/vi/wERgpPK44w0/default.jpg False
```

```

ratings_disabled  video_error_or_removed  \
0                False                    False
1                False                    False
2                False                    False
3                False                    False
4                False                    False
...
37347            False                    False
37348            False                    False
37349            False                    False
37350            False                    False
37351            False                    False

description
0    Presenting Sharry Mann latest Punjabi Song Cu...
1    , , ...
2    Watch Stylish Star Allu Arjun @ ChaySam Weddin...
3    This video showcases the difference between pe...
4    why Samantha became EMOTIONAL @ Samantha naga ...
...
37347 PRG Music & RDC Rajasthani presents ...
37348 Flowers - A R Rahman Show,Book your Tickets He...
37349 Subscribe to Mazhavil Manorama now for your da...
37350 Nuabohu : Story of a rustic village girl who w...
37351 Check out Ee Nagarani Emaindi Trailer #EeNag...
```

```
[37352 rows x 16 columns]
```

```
[3]: df.describe()
```

```

[3]:      category_id      views      likes      dislikes  comment_count
count  37352.000000  3.735200e+04  3.735200e+04  3.735200e+04    37352.00000
mean    21.576596  1.060478e+06  2.708272e+04  1.665082e+03     2676.99743
std      6.556593  3.184932e+06  9.714510e+04  1.607617e+04    14868.31713
min      1.000000  4.024000e+03  0.000000e+00  0.000000e+00      0.00000
25%     23.000000  1.239155e+05  8.640000e+02  1.080000e+02      81.00000
50%     24.000000  3.045860e+05  3.069000e+03  3.260000e+02     329.00000
75%     24.000000  7.992912e+05  1.377425e+04  1.019250e+03    1285.00000
max     43.000000  1.254322e+08  2.912710e+06  1.545017e+06   827755.00000
```

```
[4]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 37352 entries, 0 to 37351
```

Data columns (total 16 columns):

#	Column	Non-Null Count	Dtype
0	video_id	37352 non-null	object
1	trending_date	37352 non-null	object
2	title	37352 non-null	object
3	channel_title	37352 non-null	object
4	category_id	37352 non-null	int64
5	publish_time	37352 non-null	object
6	tags	37352 non-null	object
7	views	37352 non-null	int64
8	likes	37352 non-null	int64
9	dislikes	37352 non-null	int64
10	comment_count	37352 non-null	int64
11	thumbnail_link	37352 non-null	object
12	comments_disabled	37352 non-null	bool
13	ratings_disabled	37352 non-null	bool
14	video_error_or_removed	37352 non-null	bool
15	description	36791 non-null	object

dtypes: bool(3), int64(5), object(8)

memory usage: 3.8+ MB

```
[5]: df.shape
```

```
[5]: (37352, 16)
```

```
[6]: df=df.drop_duplicates()
```

```
[7]: df.shape
```

```
[7]: (33089, 16)
```

```
[8]: df.isnull().sum()
```

```
[8]: 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            527
dtype: int64

```

```

[9]: gb=df.groupby('category_id')
gb.first()

```

```

[9]:          video_id trending_date \
category_id
1          kzwfHumJyYc      17.14.11
2          NDuOXWe4KW8      17.14.11
10         7MxiQ4v0EnE      17.14.11
15         XlCHEONTqnc      17.18.11
17         efpUCPITNmw      17.14.11
19         OSMKG3SRGzQ      17.14.11
20         jfrGsxoQJnc      17.07.12
22         7gShaSuK_PY      17.14.11
23         N1vE8iiEg64      17.14.11
24         10L1hZ9qa58      17.14.11
25         zUZ1z7FwLc8      17.14.11
26         qP67a1YxSiU      17.14.11
27         Ukjn7A9L7vY      17.14.11
28         bx-QX2ZPH60      17.14.11
29         xzEb0teUiRY      17.14.11
30         UZnU-duI_qM      18.01.01
43         WPuhu6dYyQY      17.14.11

                                     title \
category_id
1      Sharry Mann: Cute Munda ( Song Teaser) | Parmi...
2                                     5      ...
10     Daang ( Full Video ) | Mankirt Aulakh | Sukh S...
15                                     WE ARE ALL GOING TO D1E.
17     Russia Vs Argentina 0-1 - All Goals & Highligh...
19     Rana hungama at #ChaySam Wedding Reception || TV9
20     Clash Royale: World Finals 2018 Reveal!
22     . . ...
23     Eruma Saani | Tamil vs English
24     Stylish Star Allu Arjun @ ChaySam Wedding Rece...
25     ,      ,      ...
26     ...
27     SDI Annual Ijtema 2017 Final Day (For Brothers)
28     Moto X4 Unboxing & Hands On Overview (Indian U...
29     "      ,      ...
30     Mass Leader (Kannada) Full Movie | Shivaraj Ku...
43     Baal Veer -      - Episode 777 (Part 1) - 1...

```

category_id	channel_title	publish_time \
1	Lokdhun Punjabi	2017-11-12T12:20:39.000Z
2	Kollywood Talk	2017-11-13T07:12:19.000Z
10	Speed Records	2017-11-11T16:41:15.000Z
15	PewDiePie	2017-11-16T17:53:31.000Z
17	NugoBasilaiaa	2017-11-11T14:55:25.000Z
19	TV9 Telugu	2017-11-12T16:08:13.000Z
20	Clash Royale	2017-12-05T13:43:12.000Z
22	Next Gen	2017-11-13T06:52:47.000Z
23	Eruma Saani	2017-11-12T07:08:48.000Z
24	TFPC	2017-11-12T15:48:08.000Z
25	HJ NEWS	2017-11-13T05:43:56.000Z
26	HOTNEWS TELUGU	2017-11-12T03:53:49.000Z
27	SDI Channel	2017-11-12T19:26:25.000Z
28	Geekyranjit	2017-11-13T10:00:04.000Z
29	Emm Pee	2017-11-12T22:34:25.000Z
30	Mantar Music	2017-12-30T09:20:48.000Z
43	Sony PAL	2017-11-11T16:55:38.000Z

category_id	tags	views \
1	sharry mann "sharry mann new song" "sharry man...	1096327
2	5 amazing signs world end "amazing facts about...	62151
10	punjabi songs "punjabi bhangra" "punjabi music...	5718766
15	[none]	2244679
17	Russia Vs Argentina 0-1 - All Goals & Highligh...	1641745
19	Rana hungama at #ChaySam Wedding Reception    TV9	176472
20	Clash Royale "Clash Royale Game" "Supercell" "...	287068
22	nextgen "sasikala" "sasikala natarajan" "aiadm...	89531
23	Eruma Saani "Tamil Comedy Videos" "Films" "Mov...	1242680
24	Stylish Star Allu Arjun @ ChaySam Wedding Rece...	473988
25	" " ...	590101
26	Miracles Caught on Camera "Miracles Caught on ...	128851
27	sdi "islam" "preacher" "sunni" "sunni ijtema" "...	137438
28	moto x4 unboxing "moto x4" "moto x4 india" "mo...	238637
29	Parmeshar "Dwar" "Trust" "Sikh" "Channel" "Kha...	51575
30	mass leader "mass leader songs" "mass leader v...	165601
43	superhero "kid with superpowers" "indian super...	433053

category_id	likes	dislikes	comment_count \
1	33966	798	882
2	843	67	48
10	127477	7134	8063
15	174921	3035	20544

17	7643	702	1082
19	588	52	23
20	7228	279	461
22	238	59	18
23	70353	1624	2684
24	2011	243	149
25	735	904	0
26	0	0	0
27	3926	249	131
28	7975	368	1274
29	0	0	0
30	1497	104	87
43	938	298	119

	thumbnail_link \
category_id	
1	<a href="https://i.ytimg.com/vi/kzwfHumJyYc/default.jpg">https://i.ytimg.com/vi/kzwfHumJyYc/default.jpg</a>
2	<a href="https://i.ytimg.com/vi/NDuOXWe4KW8/default.jpg">https://i.ytimg.com/vi/NDuOXWe4KW8/default.jpg</a>
10	<a href="https://i.ytimg.com/vi/7MxiQ4v0EnE/default.jpg">https://i.ytimg.com/vi/7MxiQ4v0EnE/default.jpg</a>
15	<a href="https://i.ytimg.com/vi/XlCHEONTqnc/default.jpg">https://i.ytimg.com/vi/XlCHEONTqnc/default.jpg</a>
17	<a href="https://i.ytimg.com/vi/efpUCPITNmW/default.jpg">https://i.ytimg.com/vi/efpUCPITNmW/default.jpg</a>
19	<a href="https://i.ytimg.com/vi/OSMKG3SRGzQ/default.jpg">https://i.ytimg.com/vi/OSMKG3SRGzQ/default.jpg</a>
20	<a href="https://i.ytimg.com/vi/jfrGsxoQJnc/default.jpg">https://i.ytimg.com/vi/jfrGsxoQJnc/default.jpg</a>
22	<a href="https://i.ytimg.com/vi/7gShaSuK_PY/default.jpg">https://i.ytimg.com/vi/7gShaSuK_PY/default.jpg</a>
23	<a href="https://i.ytimg.com/vi/N1vE8iiEg64/default.jpg">https://i.ytimg.com/vi/N1vE8iiEg64/default.jpg</a>
24	<a href="https://i.ytimg.com/vi/10L1hZ9qa58/default.jpg">https://i.ytimg.com/vi/10L1hZ9qa58/default.jpg</a>
25	<a href="https://i.ytimg.com/vi/zUZ1z7FwLc8/default.jpg">https://i.ytimg.com/vi/zUZ1z7FwLc8/default.jpg</a>
26	<a href="https://i.ytimg.com/vi/qP67aYxSiU/default.jpg">https://i.ytimg.com/vi/qP67aYxSiU/default.jpg</a>
27	<a href="https://i.ytimg.com/vi/Ukjn7A9L7vY/default.jpg">https://i.ytimg.com/vi/Ukjn7A9L7vY/default.jpg</a>
28	<a href="https://i.ytimg.com/vi/bx-QX2ZPH60/default.jpg">https://i.ytimg.com/vi/bx-QX2ZPH60/default.jpg</a>
29	<a href="https://i.ytimg.com/vi/xzEb0teUiRY/default.jpg">https://i.ytimg.com/vi/xzEb0teUiRY/default.jpg</a>
30	<a href="https://i.ytimg.com/vi/UZnU-duI_qM/default.jpg">https://i.ytimg.com/vi/UZnU-duI_qM/default.jpg</a>
43	<a href="https://i.ytimg.com/vi/WPuhu6dYyQY/default.jpg">https://i.ytimg.com/vi/WPuhu6dYyQY/default.jpg</a>

	comments_disabled	ratings_disabled	video_error_or_removed \
category_id			
1	False	False	False
2	False	False	False
10	False	False	False
15	False	False	False
17	False	False	False
19	False	False	False
20	False	False	False
22	False	False	False
23	False	False	False
24	False	False	False
25	True	False	False

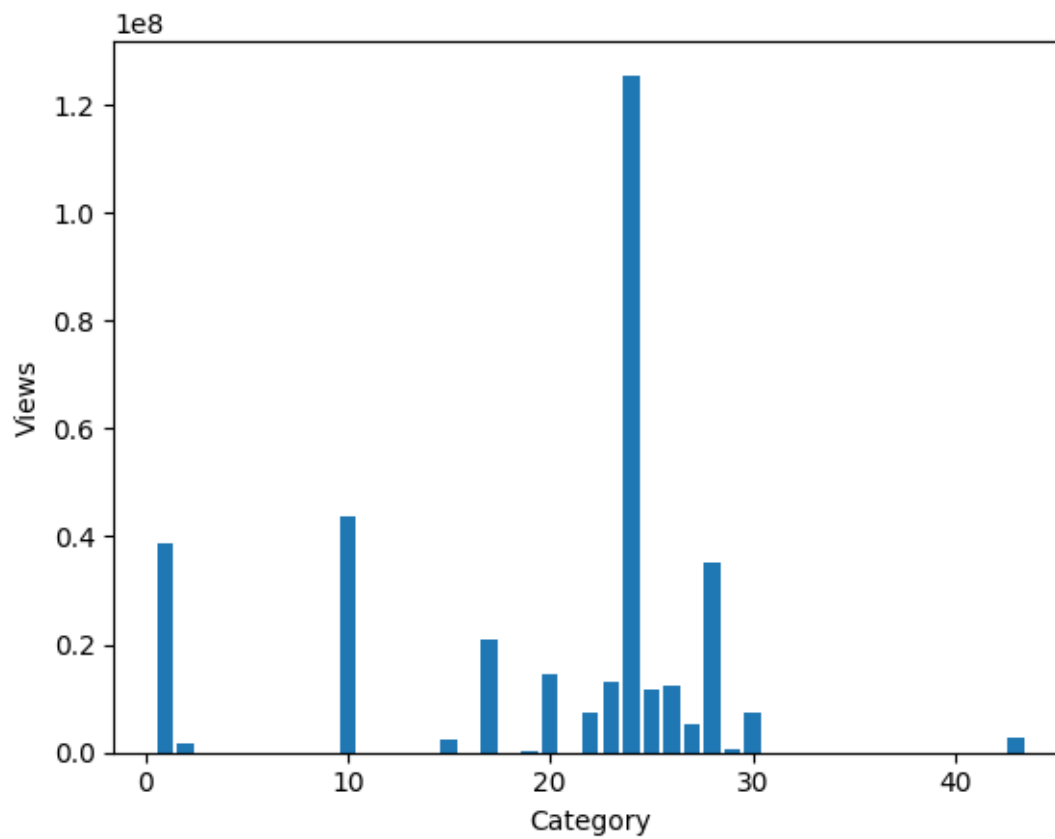
26	True	True	False
27	False	False	False
28	False	False	False
29	True	True	False
30	False	False	False
43	False	False	False

	description
category_id	
1	Presenting Sharry Mann latest Punjabi Song Cu...
2	5 ...
10	Song - Daang\nSinger - Mankirt Aulakh\nFaceboo...
15	Join my giveaway for a BEAST Origin computer! ...
17	Russia Vs Argentina 0-1 - All Goals & Highligh...
19	Rana hungama at #ChaySam Wedding Reception    ...
20	Subscribe! <a href="http://supr.cl/SubRoyale">http://supr.cl/SubRoyale</a> \n\n\nEnter...
22	\n . ...
23	This video showcases the difference between pe...
24	Watch Stylish Star Allu Arjun @ ChaySam Weddin...
25	, , ...
26	Watch ...
27	Sunni Dawate Islami Presents\nTopic: Annual I...
28	Moto X4 Unboxing & Overview the Moto X4 is pow...
29	LIVE AT - DHANOULA (BARNALA) \nFor all the lat...
30	Mass Leader (Kannada) Full Movie\n\nCasts - Sh...
43	Subscribe to Sony Pal: <a href="http://www.youtube.com/">http://www.youtube.com/</a> ...

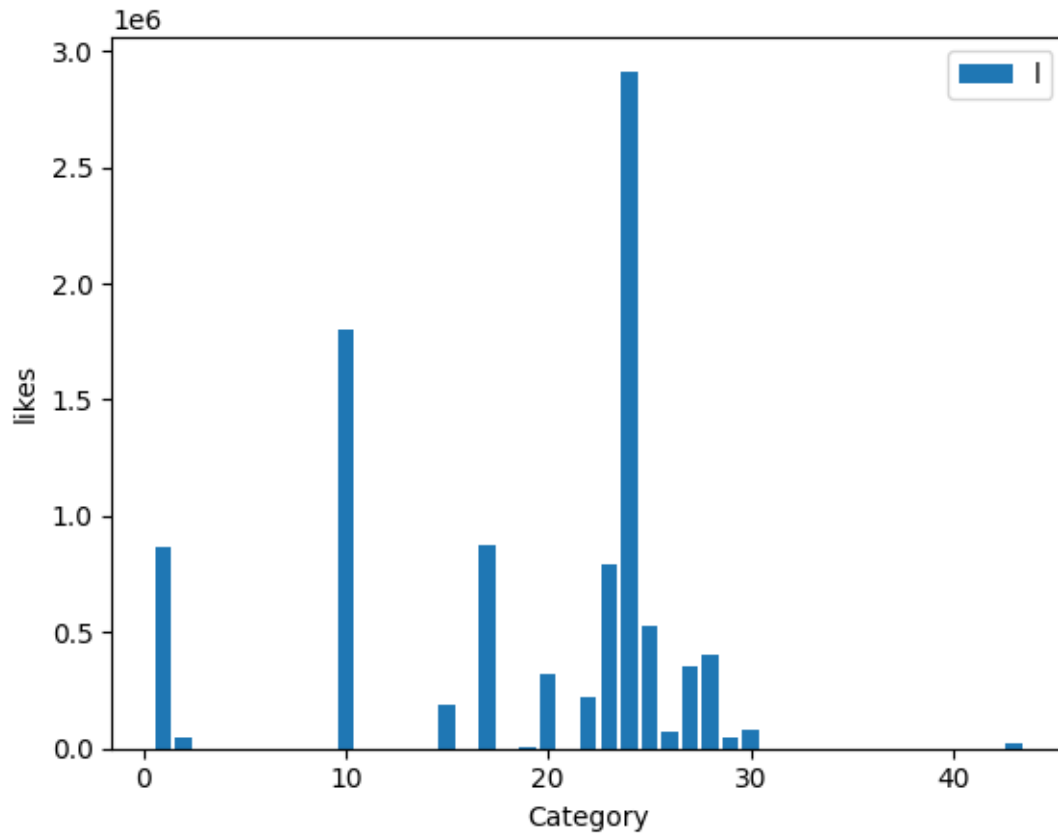
## visualizations

```
[10]: plt.bar(df.category_id,df.views)
      #plt.title('Category according to view')
      plt.xlabel('Category')
      plt.ylabel('Views')
      plt.show()
```





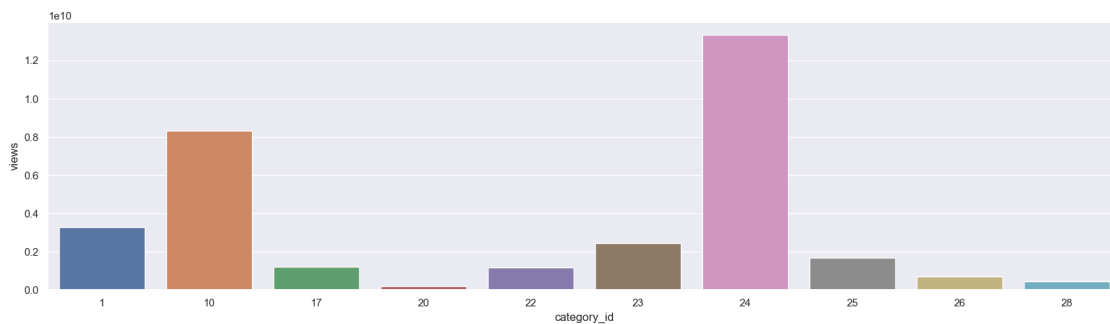
```
[11]: plt.bar(df.category_id,df.likes)
      #plt.title('Category according to view')
      plt.legend('likes')
      plt.xlabel('Category')
      plt.ylabel('likes')
      plt.show()
```



```
[12]: sd=df.groupby(['category_id'],as_index=False).sum().
      ↪sort_values(by='views',ascending=False).head(10)

sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(data=sd, x='category_id',y='views')
```

```
[12]: <Axes: xlabel='category_id', ylabel='views'>
```



```
[13]: # calculating correlation coefficient
correlation_coefficient = df['views'].corr(df['category_id'])
```

```
[14]: print(f"Correlation Coefficient (r): {correlation_coefficient}")
```

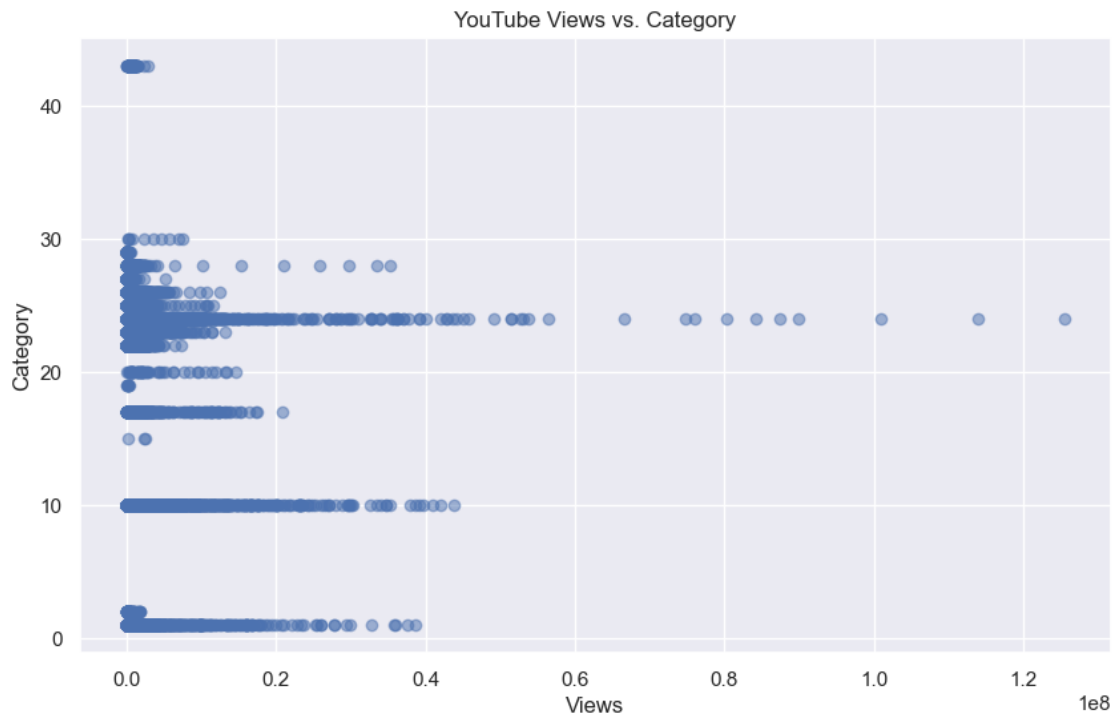
Correlation Coefficient (r): -0.17893814638362038

### Scatterplot

```
[15]: plt.figure(figsize=(10, 6))
plt.scatter(df['views'], df['category_id'], alpha=0.5)
plt.title('YouTube Views vs. Category') # Add a title
plt.xlabel('Views') # Label for the x-axis
plt.ylabel('Category') # Label for the y-axis

plt.grid(True) # Optional: Add a grid

plt.show() # Display the plot
# This code will read the data from the specified CSV file, create a
↳ scatterplot of "Views" vs. "Category," and display the plot. Adjust the
↳ figure size, title, labels, and other plot settings as needed to customize
↳ the appearance of the scatterplot.
```



```
[16]: group1 = df[df['category_id'] == 'category_id']['views']
group2 = df[df['category_id'] == 'category_id']['views']
t_statistic, p_value = stats.ttest_ind(group1, group2)
alpha = 0.05 # Significance level
if p_value < alpha:
    print(f"Reject the null hypothesis. There is a significant difference_
↪between the groups.")
else:
    print(f"Fail to reject the null hypothesis. There is no significant_
↪difference between the groups.")
```

Fail to reject the null hypothesis. There is no significant difference between the groups.