

```
!pip install isodate
import pandas as pd
from googleapiclient.discovery import build
from google.oauth2 import service_account
import matplotlib.pyplot as plt
import seaborn as sb
import numpy as np
import warnings
import isodate
warnings.filterwarnings('ignore')
```



Collecting isodate

```
Downloading isodate-0.6.1-py2.py3-none-any.whl.metadata (9.6 kB)
Requirement already satisfied: six in /usr/local/lib/python3.10/dist-packages (from isodate) (1.16.0)
Downloading isodate-0.6.1-py2.py3-none-any.whl (41 kB)
41.7/41.7 kB 1.4 MB/s eta 0:00:00
Installing collected packages: isodate
Successfully installed isodate-0.6.1
```

```
api_key = 'AIzaSyBX0aL5jN9OuSazz-s2eX5aC697220459A'
def get_trending_videos(api_key, max_results=144):
    # build the youtube service
    youtube = build('youtube', 'v3', developerKey=api_key)

    # initialize the list to hold video details
    videos = []

    # fetch the most popular videos
    request = youtube.videos().list(
        part='snippet,contentDetails,statistics',
        chart='mostPopular',
        regionCode='IN',
        maxResults=50
    )

    # paginate through the results if max_results > 50
    while request and len(videos) < max_results:
        response = request.execute()
        for item in response['items']:
            video_details = {
                'video_id': item['id'],
                'title': item['snippet']['title'],
                'description': item['snippet']['description'],
                'published_at': item['snippet']['publishedAt'],
                'channel_id': item['snippet']['channelId'],
                'channel_title': item['snippet']['channelTitle'],
                'category_id': item['snippet']['categoryId'],
                'tags': item['snippet'].get('tags', []),
                'duration': item['contentDetails']['duration'],
                'definition': item['contentDetails']['definition'],
                'caption': item['contentDetails'].get('caption', 'false'),
                'view_count': item['statistics'].get('viewCount', 0),
                'like_count': item['statistics'].get('likeCount', 0),
                'dislike_count': item['statistics'].get('dislikeCount', 0),
                'favorite_count': item['statistics'].get('favoriteCount', 0),
                'comment_count': item['statistics'].get('commentCount', 0)
            }
            videos.append(video_details)

        # get the next page token
        request = youtube.videos().list_next(request, response)

    return videos[:max_results]

trending_videos = get_trending_videos(api_key)
df = pd.DataFrame(trending_videos)
df.to_csv('trending_videos.csv', index=False)
save_to_csv = pd.read_csv('trending_videos.csv')
trending_videos = pd.read_csv('trending_videos.csv')
trending_videos.head()
```

	video_id	title	description	published_at	channel_id	channel_title	categ
0	FEMR5alT7CY	जन्माष्टमी आरती: आरती कुंज बिहारी की, Aarti Ku...	🌺🌺https://youtu.be/FEMR5alT7CY🌺🌺 nSubscribe: h...	2024-08-26T12:30:12Z	UCaayLD9i5x4MmloVZxXSv_g	T-Series Bhakti Sagar	
1	Rv5mGPT5Fdc	Kabhi Main Kabhi Tum Episode 15   Fahad Mustaf...	Watch all the episode of Kabhi Main Kabhi Tum ...	2024-08-26T16:05:08Z	UC4JCksJF76g_MdzPVBJoC3Q	ARY Digital HD	
2	m3O1nPJszk	INDIA'S GOT LATENT   EP 05 ft. @KunalKamra @At...	Latent' is an ability that is hidden deep insi...	2024-08-26T15:44:07Z	UCAov2BBv1ZJav0c_yHEciAw	Samay Raina	
3	Kycaxw_f4RI	Maestro New Released Hindi Dubbed Movie 2024  ...	Presenting New south indian movies dubbed in h...	2024-08-24T13:30:08Z	UCX_uPA_dGf7wXjuMEaSKLJA	Aditya Movies	
4	7ugnQV4vIwA	We Make Boat Using Bottles 🚢 - Will It Survive?	SUBSCRIBE: https://youtube.com/MRINDIANHACKER?...	2024-08-26T12:08:24Z	UCSiDGB0MnHFGjs4E2WKvShw	MR. INDIAN HACKER	

Next steps: [Generate code with trending\\_videos](#) [View recommended plots](#) [New interactive sheet](#)

Start coding or [generate](#) with AI.

```
blank = trending_videos.isnull().sum()
blank
```

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published_at	0
channel_id	0
channel_title	0
category_id	0
tags	0
duration	0
definition	0
caption	0
view_count	0
like_count	0
dislike_count	0
favorite_count	0
comment_count	0

```
trending_videos['published_at'] = pd.to_datetime(trending_videos['published_at'])
trending_videos['published_at'] = trending_videos['published_at'].dt.date
trending_videos['duration_seconds'] = trending_videos['duration'].apply(lambda x: isodate.parse_duration(x).total_seconds())
trending_videos['duration_range'] = pd.cut(trending_videos['duration_seconds'], bins=[0, 300, 600, 1200, 3600, 7200], labels=['0-5 min', '5-10 min', '10-15 min', '15-20 min', '20-30 min', '30-45 min', '45-60 min', '60-90 min', '90-120 min', '120-180 min', '180-240 min', '240-360 min', '360-720 min', '720-1440 min', '1440-2880 min', '2880-5760 min', '5760-11520 min', '11520-23040 min', '23040-46080 min', '46080-92160 min', '92160-184320 min', '184320-368640 min', '368640-737280 min', '737280-1474560 min', '1474560-2949120 min', '2949120-5898240 min', '5898240-11796480 min', '11796480-23592960 min', '23592960-47185920 min', '47185920-94371840 min', '94371840-188743680 min', '188743680-377487360 min', '377487360-754974720 min', '754974720-1509949440 min', '1509949440-3019898880 min', '3019898880-6039797760 min', '6039797760-12079595520 min', '12079595520-24159191040 min', '24159191040-48318382080 min', '48318382080-96636764160 min', '96636764160-193273528320 min', 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channel\_title category

T-Series Bhakti  
Sagar

ARY Digital HD

Samay Raina

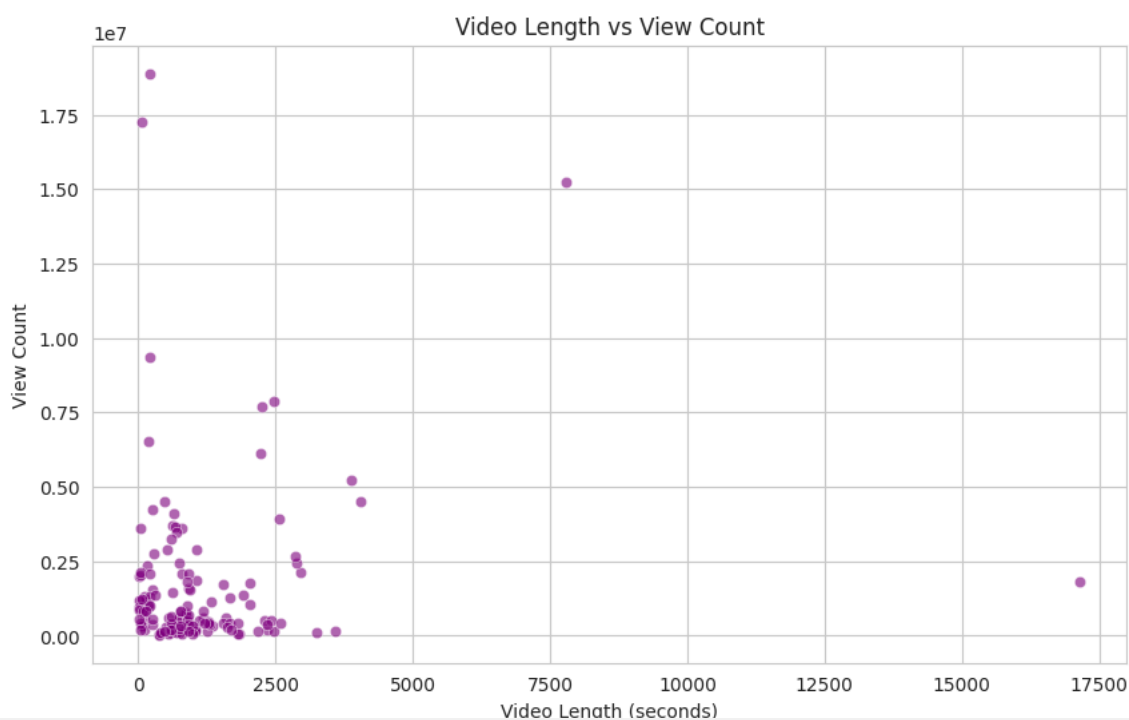
Aditya Movies

MR. INDIAN  
HACKER


Next steps:





[Generate code with trending\\_videoses](#)[View recommended plots](#)[New interactive sheet](#)

```
plt.figure(figsize=(10, 6))
sb.scatterplot(x='duration_seconds', y='view_count', data=trending_videoses, alpha=0.6, color='purple')
plt.title('Video Length vs View Count')
plt.xlabel('Video Length (seconds)')
plt.ylabel('View Count')
plt.show()
```



```
trending_videoses['description'].fillna('No description', inplace=True)
trending_videoses['tags'] = trending_videoses['tags'].apply(lambda x: ', '.join(x))
# trending_videoses['tags'] = trending_videoses['tags'].apply(lambda x:eval(x) if isinstance(x,str) else x)
trending_videoses.head()
```

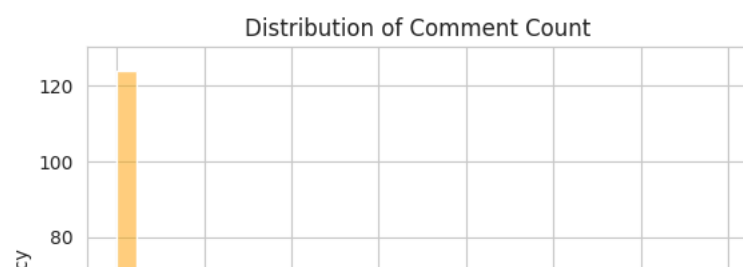
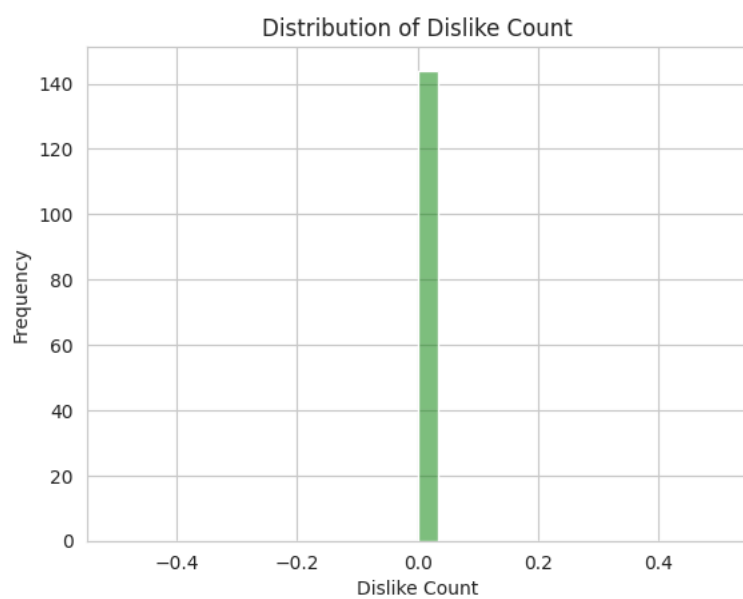
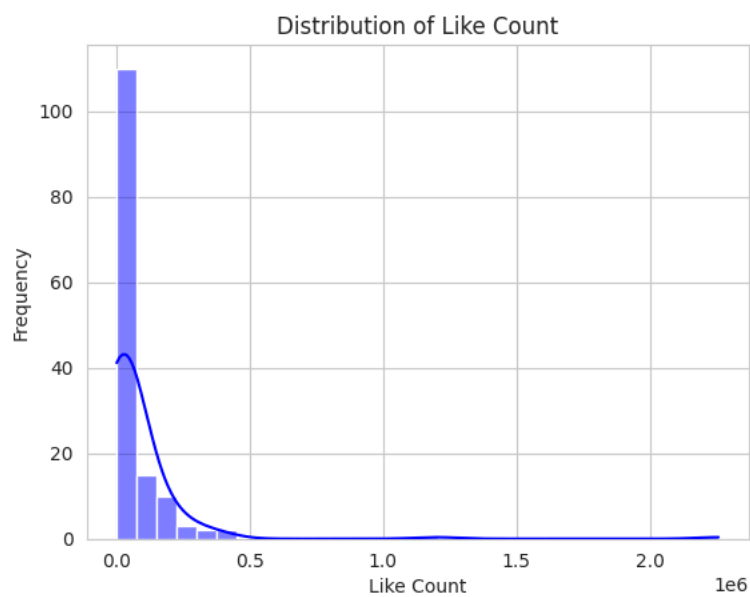
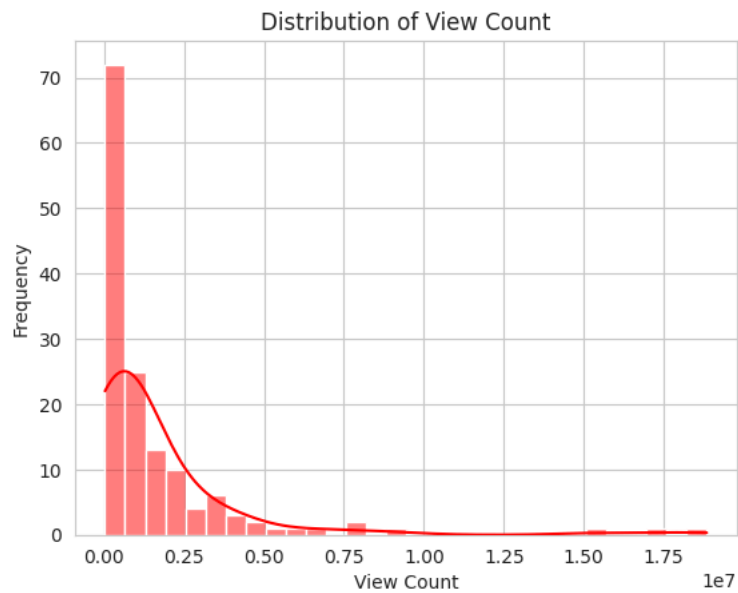


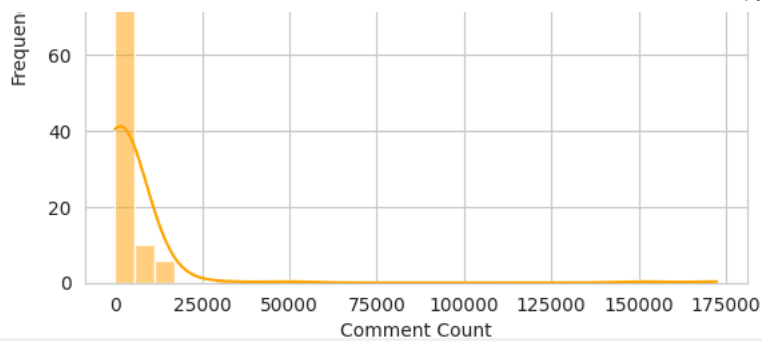
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0	FEMR5alT7CY	जन्माष्टमी आरती: आरती कुंज बिहारी की, Aarti Ku...	  <a href="https://youtu.be/FEMR5alT7CY">https://youtu.be/FEMR5alT7CY</a>   nSubscribe: h...	2024-08-26	UCaayLD9i5x4MmloVZxXSv_g	T-Series Bhakti Sagar	
1	Rv5mGpt5Fdc	Kabhi Main Kabhi Tum Episode 15   Fahad Mustaf...	Watch all the episode of Kabhi Main Kabhi Tum ...	2024-08-26	UC4JCksJF76g_MdzPVBJoC3Q	ARY Digital HD	
2	m3O1lnPJszk	INDIA'S GOT LATENT   EP 05 ft. @KunalKamra @At...	Latent' is an ability that is hidden deep insi...	2024-08-26	UCAov2BBv1ZJav0c_yHEciAw	Samay Raina	
3	Kycaxw_f4RI	Maestro New Released Hindi Dubbed Movie 2024  ...	Presenting New south indian movies dubbed in h...	2024-08-24	UCX_uPA_dGf7wXjuMEaSKLJA	Aditya Movies	
4	7ugnQV4vlwA	We Make Boat Using Bottles 🤖 - Will It Survive?	SUBSCRIBE: <a href="https://youtube.com/MRINDIANHACKER?...">https://youtube.com/MRINDIANHACKER?...</a>	2024-08-26	UCSiDGb0MnHFGjs4E2WKvShw	MR. INDIAN HACKER	

Next steps: [Generate code with trending\\_videoses](#) [View recommended plots](#) [New interactive sheet](#)

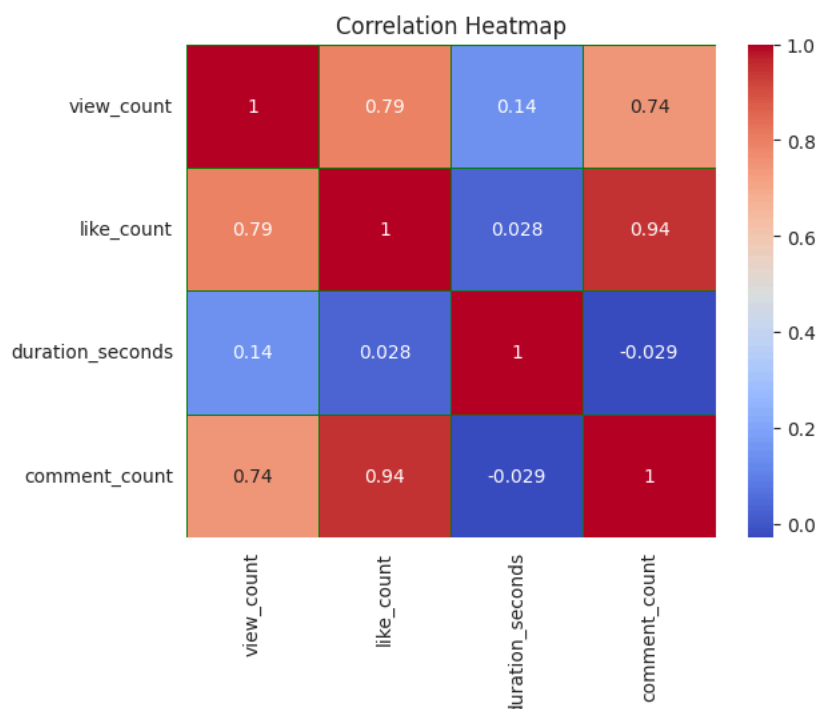
```
sb.set_style('whitegrid')

sb.histplot(trending_videoses['view_count'],bins=30 , kde = True ,color = 'red')
plt.xlabel('View Count')
plt.ylabel('Frequency')
plt.title('Distribution of View Count')
plt.show()
sb.histplot(trending_videoses['like_count'],bins=30 , kde = True ,color = 'blue')
plt.xlabel('Like Count')
plt.ylabel('Frequency')
plt.title('Distribution of Like Count')
plt.show()
sb.histplot(trending_videoses['dislike_count'],bins=30 , kde = True ,color = 'green')
plt.xlabel('Dislike Count')
plt.ylabel('Frequency')
plt.title('Distribution of Dislike Count')
plt.show()
sb.histplot(trending_videoses['comment_count'],bins=30 , kde = True ,color = 'orange')
plt.xlabel('Comment Count')
plt.ylabel('Frequency')
plt.title('Distribution of Comment Count')
plt.show()
```





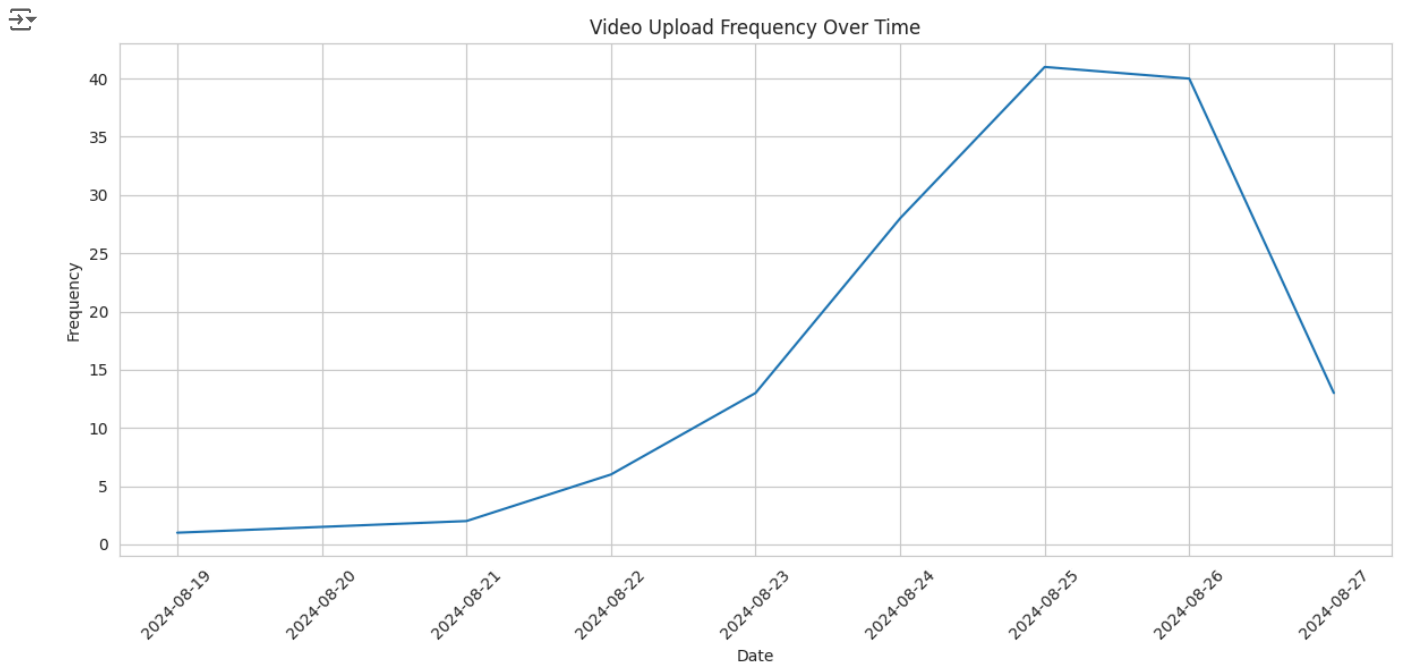
```
coorelation_matrix = trending_videos[['view_count', 'like_count', 'duration_seconds', 'comment_count']].corr()
coorelation_matrix
sb.heatmap(coorelation_matrix, annot=True, cmap='coolwarm', linewidths=0.5, linecolor='green')
plt.title('Correlation Heatmap')
plt.show()
```



```
trending_videos['published_at'] = pd.to_datetime(trending_videos['published_at']) # Ensure datetime format
```

```
# Group by 'published_at' and count occurrences
video_counts = trending_videos.groupby('published_at').size()
```

```
# Create the plot
plt.figure(figsize=(12, 6))
plt.plot(video_counts.index, video_counts.values)
plt.grid=False
plt.xlabel('Date')
plt.ylabel('Frequency')
plt.title('Video Upload Frequency Over Time')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



```

youtube = build('youtube', 'v3', developerKey=api_key)
request = youtube.videoCategories().list(
    part='snippet',
    regionCode='IN'
)
response = request.execute()
response
category_dict = {}
for item in response['items']:
    category_id = item['id']
    category_name = item['snippet']['title']
    category_dict[category_id] = category_name
print(category_dict)

```

```

{'1': 'Film & Animation', '2': 'Autos & Vehicles', '10': 'Music', '15': 'Pets & Animals', '17': 'Sports', '18': 'Short Movies', '19'

```

```

def get_category_dict(api_key):
    youtube = build('youtube', 'v3', developerKey=api_key)
    request = youtube.videoCategories().list(
        part='snippet',
        regionCode='IN'
    )
    response = request.execute()
    return {item['id']: item['snippet']['title'] for item in response['items']}
trending_videos = get_trending_videos(api_key)
#category_dict = {}
df = pd.DataFrame(trending_videos)
df['category_name'] = df['category_id'].map(category_dict)

# Now you have the 'category_name' column in your DataFrame
print(df.head())
plt.figure(figsize=(10, 6))
sb.countplot(data=df, x='category_name', palette='viridis', order=df['category_name'].value_counts().index)
plt.xticks(rotation=45)
plt.xlabel('Number of Videos')
plt.ylabel('Category')
plt.title('Number of Trending Videos by Category')
plt.show()

```

```

video_id      title \
0 FEMR5a1T7CY जन्माष्टमी आरती: आरती कुंज बिहारी की, Aarti Ku...
1 Rv5mGpt5Fdc Kabhi Main Kabhi Tum Episode 15 | Fahad Mustaf...
2 m301lnPJszk INDIA'S GOT LATENT | EP 05 ft. @KunalKamra @At...
3 Kycaxw_f4RI Maestro New Released Hindi Dubbed Movie 2024 |...
4 7ugnQV4vIwA We Make Boat Using Bottles 🚤 - Will It Survive?

description    published_at \
0 🚀🔥https://youtu.be/FEMR5a1T7CY🔥🚀 \nSubscribe: h... 2024-08-26T12:30:12Z
1 Watch all the episode of Kabhi Main Kabhi Tum ... 2024-08-26T16:05:08Z
2 Latent' is an ability that is hidden deep insi... 2024-08-26T15:44:07Z
3 Presenting New south indian movies dubbed in h... 2024-08-24T13:30:08Z
4 SUBSCRIBE: https://youtube.com/MRINDIANHACKER?... 2024-08-26T12:08:24Z

channel_id      channel_title category_id \
0 UCaayLD9i5x4MmIoVZxXSv_g T-Series Bhakti Sagar 10
1 UC4JCKsJF76g_MdzPVBJoC3Q ARY Digital HD 24
2 UCAov2BBv1ZJav0c_yHEciAw Samay Raina 20
3 UCX_uPA_dGf7wXjuMEaSKLJA Aditya Movies 1
4 UCSiDGB0MnHFGjs4E2WKvShw MR. INDIAN HACKER 28

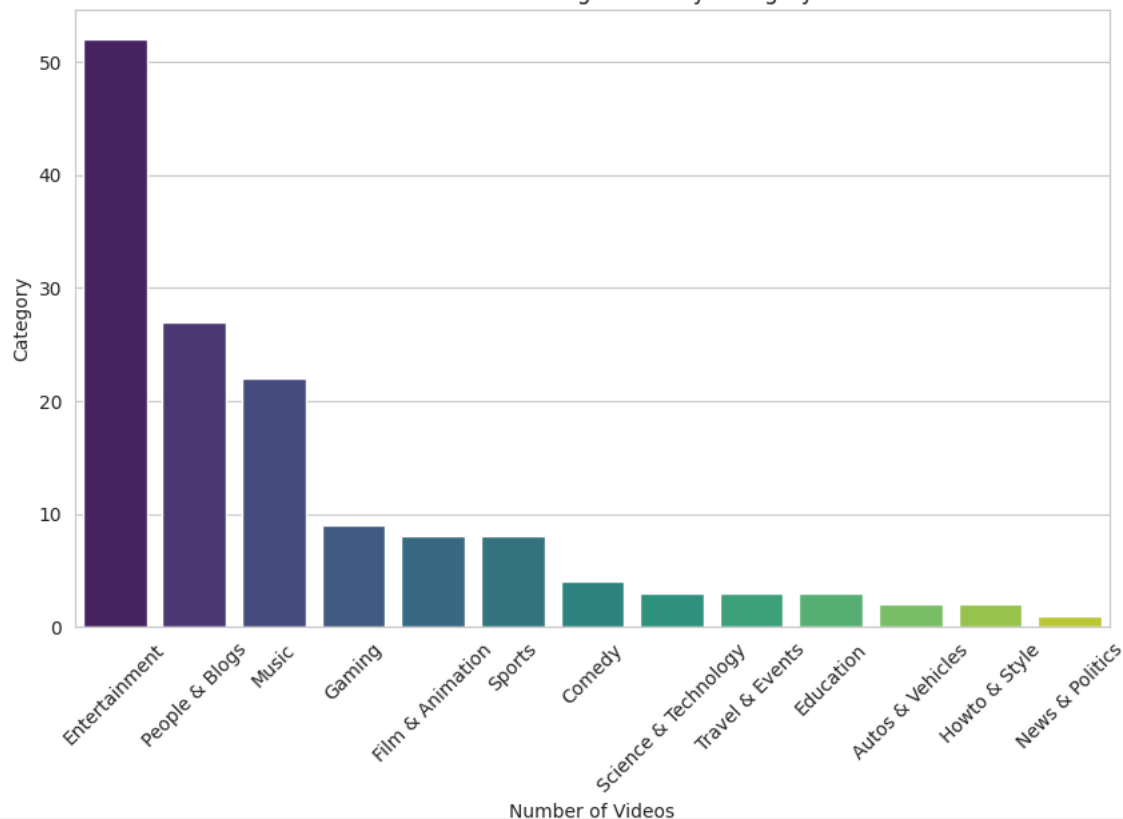
tags    duration definition \
0 [devotional songs, bhakti bhajans, bhakti song... PT4M28S hd
1 [ary, ary digital, new Pakistani dramas, Kabhi... PT41M25S hd
2 [samay raina, samay raina comedy, samay raina ... PT1H7M27S hd
3 [Maestro, maestro full movie in hindi dubbed, ... PT2H10M4S hd
4 [boat, bottles, boatfrombottles, waterbottles,... PT12M24S hd

caption view_count like_count dislike_count favorite_count comment_count \
0 true 1545945 14966 0 0 553
1 true 7884402 162648 0 0 5903
2 false 4521058 366628 0 0 17321
3 true 15234544 379236 0 0 10640
4 false 2439303 220796 0 0 11681

category_name
0 Music
1 Entertainment
2 Gaming
3 Film & Animation
4 Science & Technology

```

Number of Trending Videos by Category





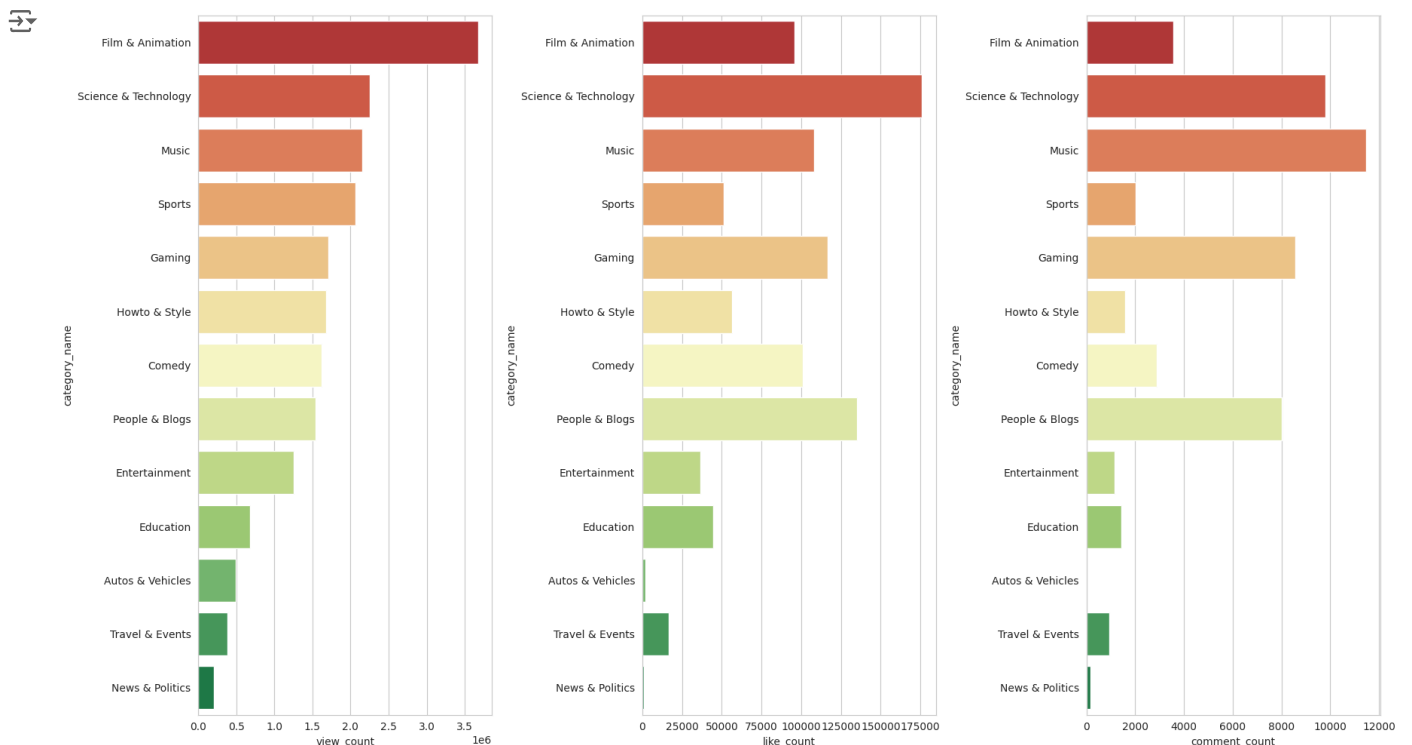
```

df['view_count'] = pd.to_numeric(df['view_count'])
df['like_count'] = pd.to_numeric(df['like_count'])
df['comment_count'] = pd.to_numeric(df['comment_count'])
category_stats = df.groupby('category_name')[['view_count', 'like_count', 'comment_count']].mean().sort_values(by='view_count', ascending=False)
# ({
#     'view_count': 'mean',
#     'like_count': 'mean',
#     'comment_count': 'mean'
# }).reset_index()
category_stats
sb.set_style('whitegrid')
fig, axes = plt.subplots(1, 3, figsize=(18, 10))
sb.barplot(data=category_stats.reset_index(), x='view_count', y='category_name', ax=axes[0], palette='RdYlGn')
# plt.xlabel('Category')
# plt.ylabel('Average View Count')
# plt.title('Average View Count by Category')

sb.barplot(data=category_stats.reset_index(), x='like_count', y='category_name', ax=axes[1], palette='RdYlGn')
# plt.xlabel('Category')
# plt.ylabel('Average Like Count')
# plt.title('Average Like Count by Category')

sb.barplot(data=category_stats.reset_index(), x='comment_count', y='category_name', ax=axes[2], palette='RdYlGn')
plt.tight_layout()

```



```

df['duration_seconds'] = df['duration'].apply(lambda x: isodate.parse_duration(x).total_seconds())
df['duration_range'] = pd.cut(df['duration_seconds'], bins=[0, 300, 600, 1200, 3600, 7200], labels=['0-5 min', '5-10 min', '10-20 min',

```

```
plt.figure(figsize=(10, 6))
sb.set_style('whitegrid')
sb.scatterplot(x='duration_seconds', y='view_count', data=df, hue='duration_range', palette='viridis', alpha=0.6)

plt.title('Video Length vs View Count')
plt.xlabel('Video Length (seconds)')
plt.ylabel('View Count(log)')
plt.yscale('log')
plt.legend(title='Duration Range')
plt.show()
length_engagement = df.groupby('duration_range')[['view_count', 'like_count', 'comment_count']].mean()
fig, axes = plt.subplots(1,3,figsize=(18,10))
sb.barplot(y='view_count',x=length_engagement.index,data=length_engagement.reset_index(),ax=axes[0],palette='viridis')
sb.barplot(y='like_count',x=length_engagement.index,data=length_engagement.reset_index(),ax=axes[1],palette='viridis')
sb.barplot(y='comment_count',x=length_engagement.index,data=length_engagement.reset_index(),ax=axes[2],palette='viridis')
plt.tight_layout()
plt.show()
```

