In [1]:

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from datetime import datetime
```

In [2]:

```python
df=pd.read_csv('C:\\Users\\tejas\\Downloads\\USvideos.csv')
```

In [3]:

```python
df.head()
```

Out[3]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	2kyS6SvSYSE	17.14.11	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	
1	1ZAPwfrtAFY	17.14.11	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13T07:30:00.000Z	las
2	5qpjK5DgCt4	17.14.11	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	super
3	puqaWrEC7tY	17.14.11	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	24	2017-11-13T11:00:04.000Z	
4	d380meD0W0M	17.14.11	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12T18:01:41.000Z	

In [4]:

```python
df.shape
```

Out[4]:

```
(40949, 16)
```

In [5]:

```python
df=df.drop_duplicates()
```

In [6]:

```python
df.shape
```

Out[6]:

```
(40901, 16)
```

In [7]:

```python
df.describe()
```

Out[7]:

	category_id	views	likes	dislikes	comment_count
count	40901.000000	4.090100e+04	4.090100e+04	4.090100e+04	4.090100e+04
mean	19.970588	2.360678e+06	7.427173e+04	3.711722e+03	8.448567e+03
std	7.569362	7.397719e+06	2.289999e+05	2.904624e+04	3.745139e+04
min	1.000000	5.490000e+02	0.000000e+00	0.000000e+00	0.000000e+00
25%	17.000000	2.419720e+05	5.416000e+03	2.020000e+02	6.130000e+02
50%	24.000000	6.810640e+05	1.806900e+04	6.300000e+02	1.855000e+03
75%	25.000000	1.821926e+06	5.533800e+04	1.936000e+03	5.752000e+03
max	43.000000	2.252119e+08	5.613827e+06	1.674420e+06	1.361580e+06

In [8]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 40901 entries, 0 to 40948
Data columns (total 16 columns):
 #   Column                  Non-Null Count  Dtype 
---  ------                  --------------  ----- 
 0   video_id                40901 non-null  object
 1   trending_date           40901 non-null  object
 2   title                   40901 non-null  object
 3   channel_title           40901 non-null  object
 4   category_id             40901 non-null  int64 
 5   publish_time            40901 non-null  object
 6   tags                    40901 non-null  object
 7   views                   40901 non-null  int64 
 8   likes                   40901 non-null  int64 
 9   dislikes                40901 non-null  int64 
 10  comment_count           40901 non-null  int64 
 11  thumbnail_link          40901 non-null  object
 12  comments_disabled       40901 non-null  bool  
 13  ratings_disabled        40901 non-null  bool  
 14  video_error_or_removed  40901 non-null  bool  
 15  description             40332 non-null  object
dtypes: bool(3), int64(5), object(8)
memory usage: 4.5+ MB
```

In [9]:

```
columns_to_remove=['thumbnail_link','description']
df=df.drop(columns=columns_to_remove)
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 40901 entries, 0 to 40948
Data columns (total 14 columns):
 #   Column                  Non-Null Count  Dtype 
---  ------                  --------------  ----- 
 0   video_id                40901 non-null  object
 1   trending_date           40901 non-null  object
 2   title                   40901 non-null  object
 3   channel_title           40901 non-null  object
 4   category_id             40901 non-null  int64 
 5   publish_time            40901 non-null  object
 6   tags                    40901 non-null  object
 7   views                   40901 non-null  int64 
 8   likes                   40901 non-null  int64 
 9   dislikes                40901 non-null  int64 
 10  comment_count           40901 non-null  int64 
 11  comments_disabled       40901 non-null  bool  
 12  ratings_disabled        40901 non-null  bool  
 13  video_error_or_removed  40901 non-null  bool  
dtypes: bool(3), int64(5), object(6)
memory usage: 3.9+ MB
```

In [ ]:

```

```

In [21]:

```
from datetime import datetime

df["trending_date"] = df["trending_date"].apply(
    lambda x: datetime.strptime(str(x), "%y.%d.%m") if isinstance(x, str) else x
)
```

In [22]:

```
df.head(3)
```

Out[22]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13T07:30:00.000Z	last w
2	5qpjK5DgCt4	2017-11-14	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	superma

In [23]:

```
df['publish_time']=pd.to_datetime(df['publish_time'])
df.head(2)
```

Out[23]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13 17:13:01+00:00	SHA m
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13 07:30:00+00:00	last tonight tr presidency we

In [24]:

```
df['publish_month']=df['publish_time'].dt.month
df['publish_day']=df['publish_time'].dt.day
df['publish_hour']=df['publish_time'].dt.hour
df.head(2)
```

Out[24]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13 17:13:01+00:00	SHA m
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13 07:30:00+00:00	last tonight tr presidency we

In [26]:

```
print(sorted(df["category_id"].unique()))
[1,2,10,15,17,19,20,22,23,24,25,26,27,28,29,30,43]
```

```
[1, 2, 10, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 43]
[1, 2, 10, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 43]
```

Out[26]:

In [29]:

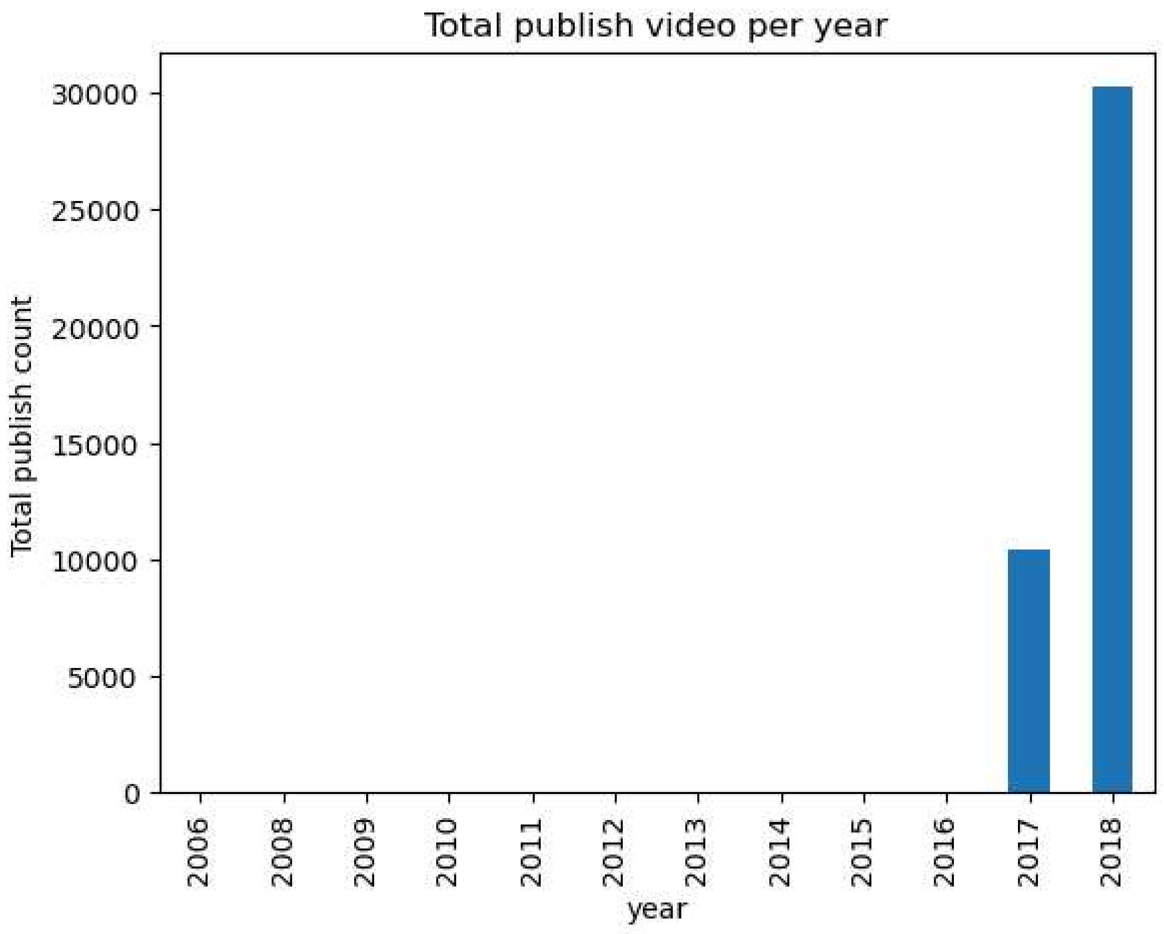
```
df['category_name']=np.nan
df.loc[df["category_id"]==1,"category_name"]='Film and Animation'
df.loc[df["category_id"]==2,"category_name"]='Autos and Vehicles'
df.loc[df["category_id"]==10,"category_name"]='Music'
df.loc[df["category_id"]==15,"category_name"]='Pets and Animals'
df.loc[df["category_id"]==17,"category_name"]='Sports'
df.loc[df["category_id"]==19,"category_name"]='Travel and Events'
df.loc[df["category_id"]==20,"category_name"]='Gravity'
df.loc[df["category_id"]==22,"category_name"]='People and Blogs'
df.loc[df["category_id"]==23,"category_name"]='Comedy'
df.loc[df["category_id"]==24,"category_name"]='Entertainment'
df.loc[df["category_id"]==25,"category_name"]='News and Politics'
df.loc[df["category_id"]==26,"category_name"]='How to and style'
df.loc[df["category_id"]==27,"category_name"]='Education'
df.loc[df["category_id"]==28,"category_name"]='Science and Technology'
df.loc[df["category_id"]==29,"category_name"]='Non profits and Activism'
df.loc[df["category_id"]==30,"category_name"]='Movies'
df.loc[df["category_id"]==43,"category_name"]='Shows'

df.head()
```

Out[29]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13 17:13:01+00:00	
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13 07:30:00+00:00	last
2	5qpjK5DgCt4	2017-11-14	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12 19:05:24+00:00	superm
3	puqaWrEC7tY	2017-11-14	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	24	2017-11-13 11:00:04+00:00	r
4	d380meD0W0M	2017-11-14	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12 18:01:41+00:00	ry

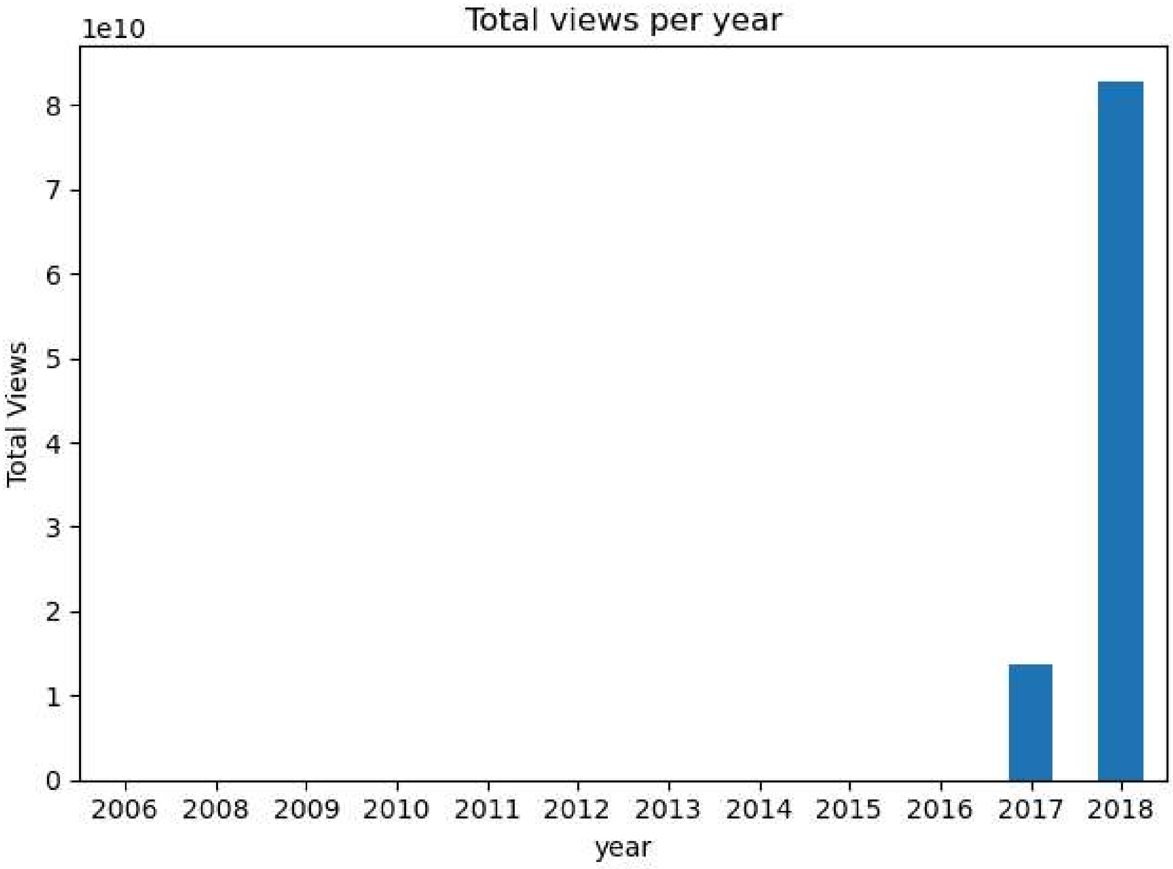
In [32]:

```
df['year']=df['publish_time'].dt.year
yearly_counts=df.groupby('year')['video_id'].count()
yearly_counts.plot(kind='bar',xlabel='year',ylabel='Total publish count',title='Tot
plt.show()
```



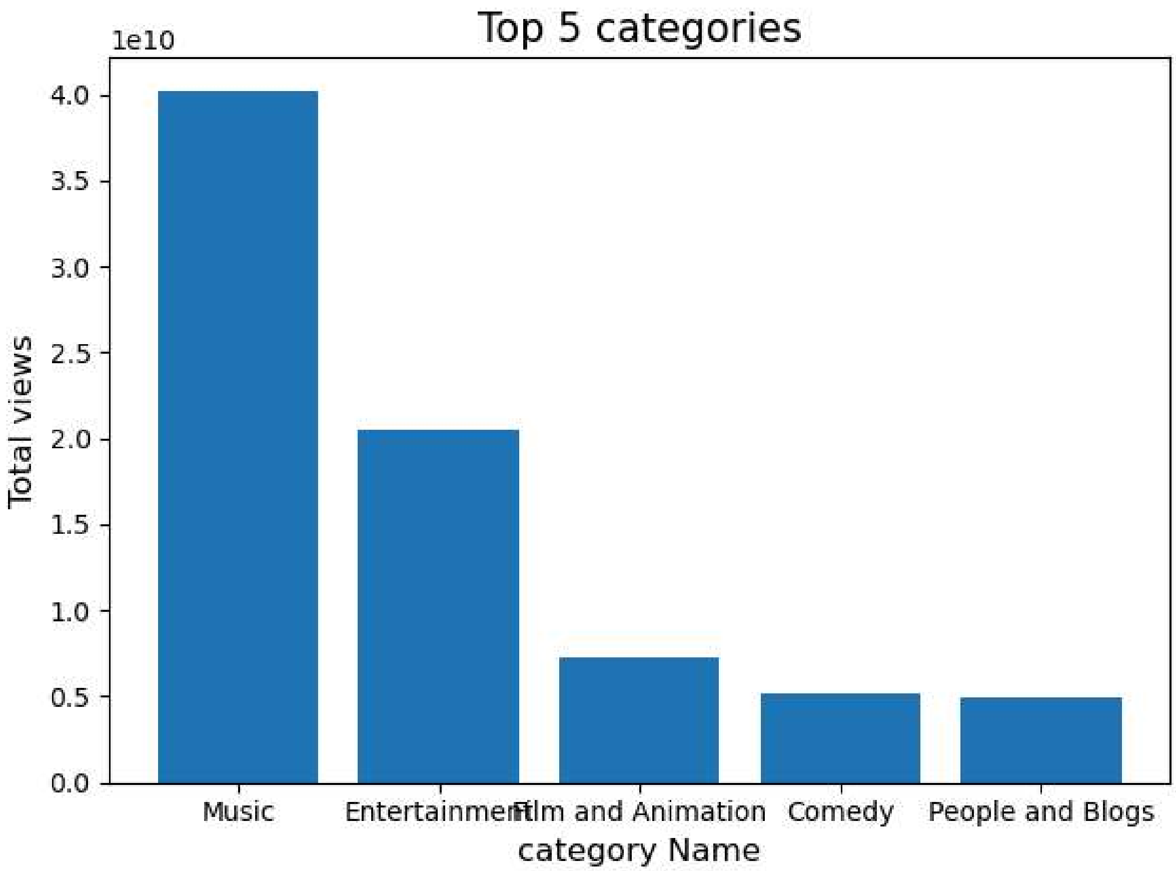
In [34]:

```
yearly_views=df.groupby('year')['views'].sum()
yearly_views.plot(kind='bar',xlabel='year',ylabel='Total Views',title='Total views
plt.xticks(rotation=0)
plt.tight_layout()
plt.show()
```

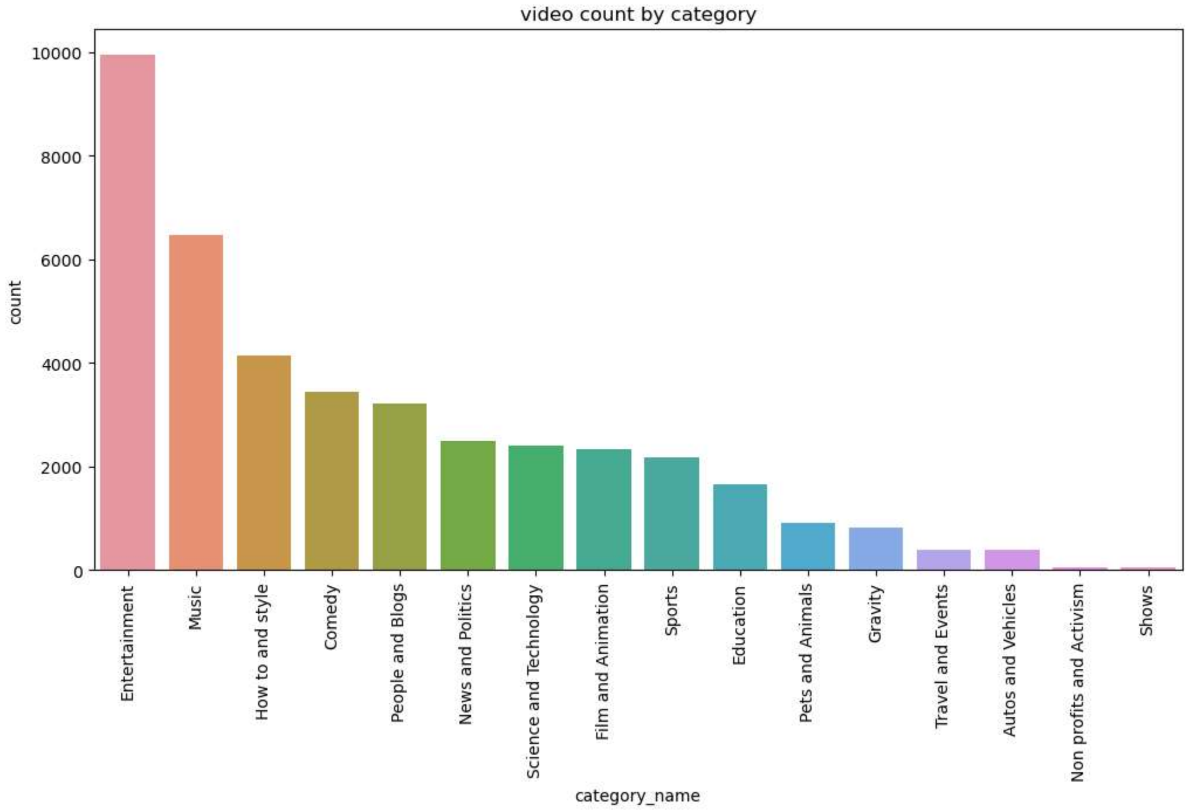


In [37]:

```
#Group the data by 'Category_name' and calculate the sum of views in each category

category_views=df.groupby('category_name')['views'].sum().reset_index()

top_categories=category_views.sort_values(by='views',ascending=False).head(5)
plt.bar(top_categories['category_name'],top_categories['views'])
plt.xlabel('category Name',fontsize=12)
plt.ylabel('Total views',fontsize=12)
plt.title('Top 5 categories',fontsize=15)
plt.tight_layout()
plt.show()
```

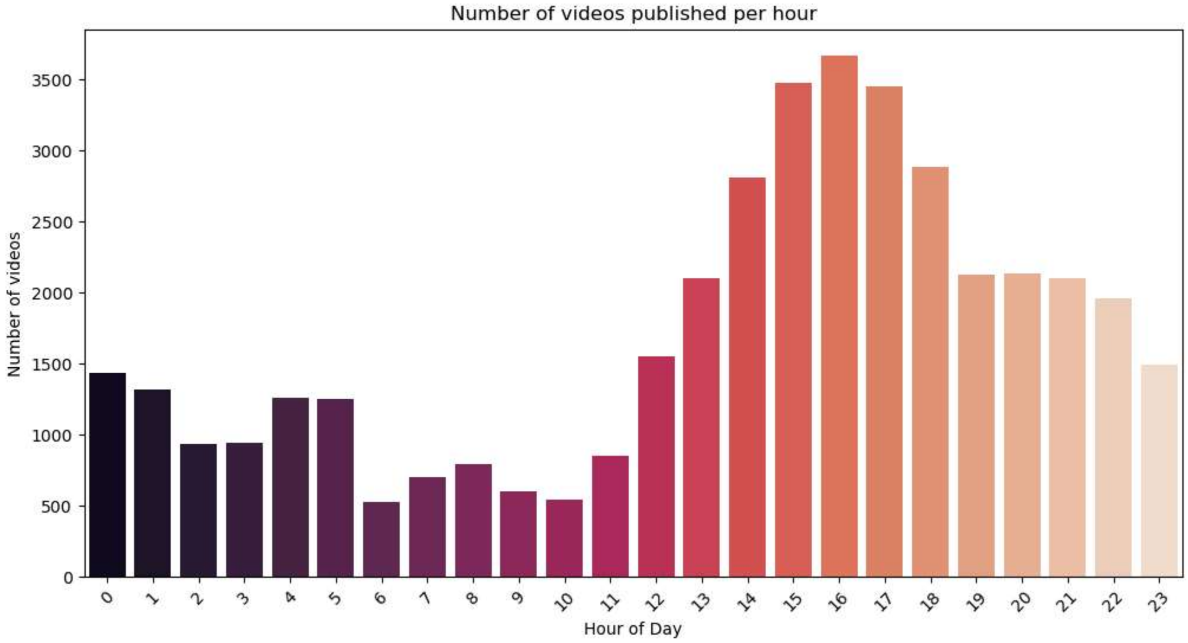


In [38]:
```
plt.figure(figsize=(12,6))
sns.countplot(x='category_name',data=df,order=df['category_name'].value_counts().ir
plt.xticks(rotation=90)
plt.title('video count by category')
plt.show()
```



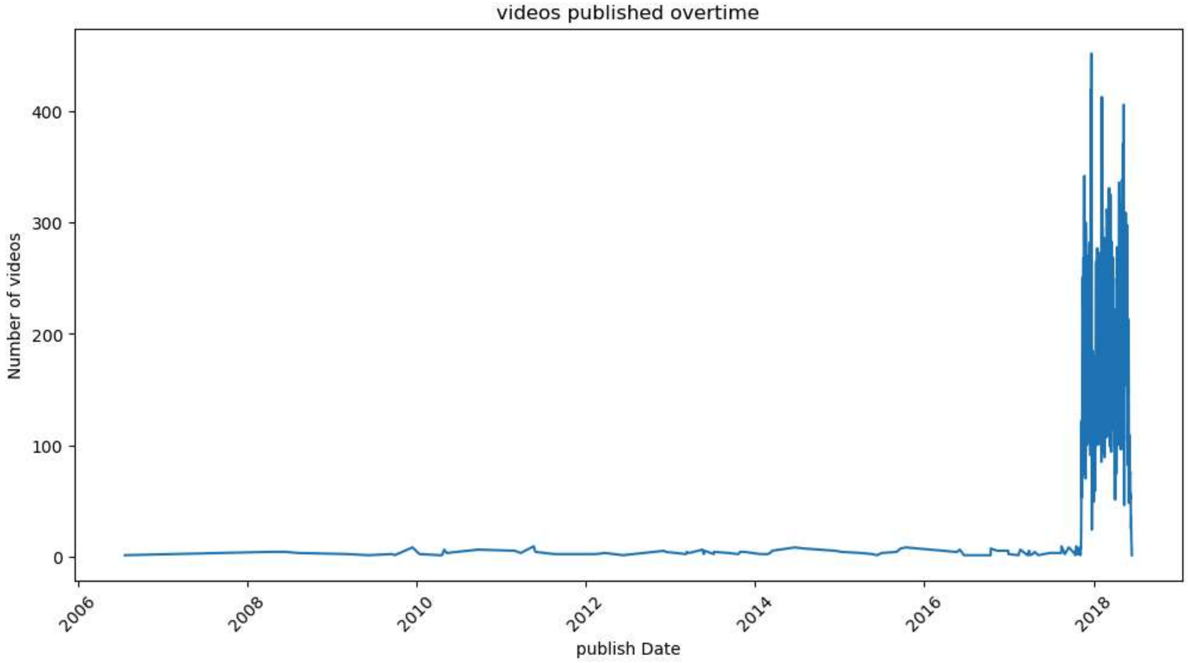
In [41]:
```
videos_per_hour=df['publish_hour'].value_counts().sort_index()
plt.figure(figsize=(12,6))
sns.barplot(x=videos_per_hour.index,y=videos_per_hour.values,palette='rocket')
```

```
plt.title('Number of videos published per hour')
plt.xlabel('Hour of Day')
plt.ylabel('Number of videos')
plt.xticks(rotation=45)
plt.show()
```



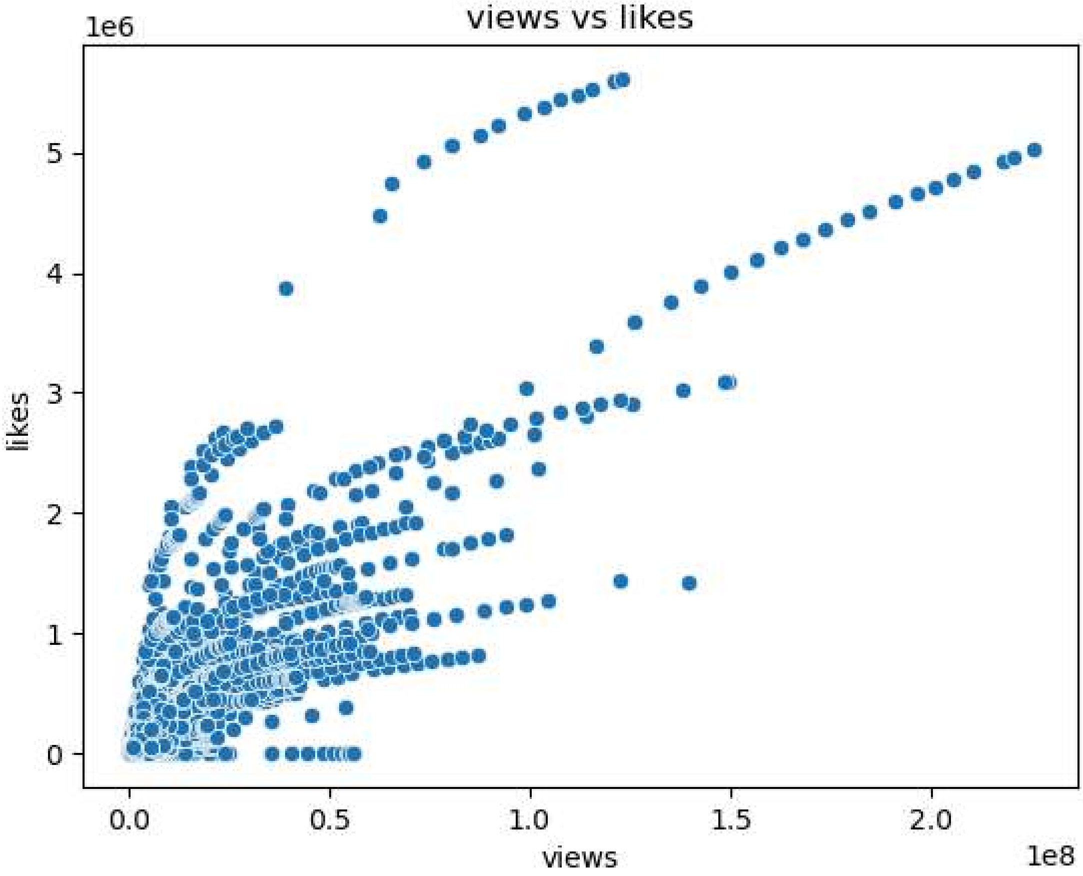
In [43]:

```
df['publish_time']=pd.to_datetime(df['publish_time'])
df['publish_date']=df['publish_time'].dt.date
video_count_by_date=df.groupby('publish_date').size()
plt.figure(figsize=(12,6))
sns.lineplot(data=video_count_by_date)
plt.title("videos published overtime")
plt.xlabel('publish Date')
plt.ylabel('Number of videos')
plt.xticks(rotation=45)
plt.show()
```



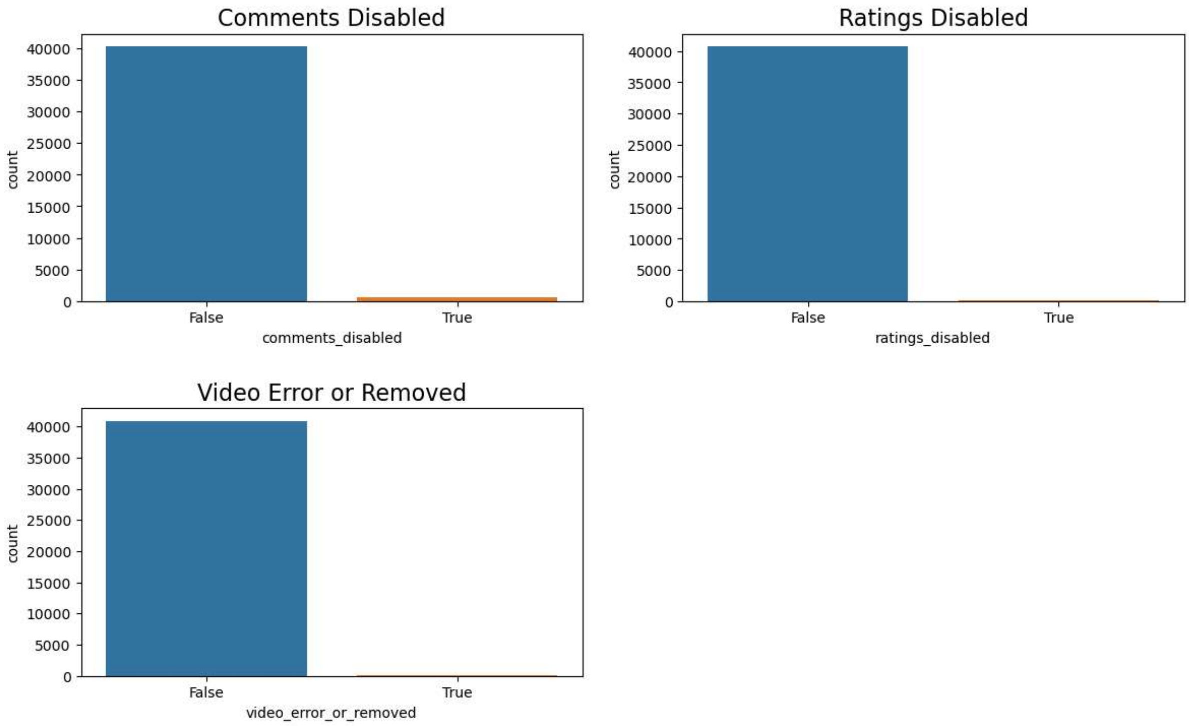
In [44]:

```
#scatter plot between 'views' and 'likes'
sns.scatterplot(data=df,x='views',y='likes')
plt.title('views vs likes')
plt.xlabel('views')
plt.ylabel('likes')
plt.show()
```



In [67]:

```
import seaborn as sns
import matplotlib.pyplot as plt

plt.figure(figsize=(14, 8))
plt.subplots_adjust(wspace=0.2, hspace=0.4, top=0.9)

plt.subplot(2, 2, 1)
g = sns.countplot(x='comments_disabled', data=df)
g.set_title("Comments Disabled", fontsize=16)

plt.subplot(2, 2, 2)
g1 = sns.countplot(x='ratings_disabled', data=df)
g1.set_title("Ratings Disabled", fontsize=16)

plt.subplot(2, 2, 3)
g2 = sns.countplot(x='video_error_or_removed', data=df)
g2.set_title("Video Error or Removed", fontsize=16)

plt.show()
```



```
In [ ]:
```

```
In [68]: corr_matrix=df['views'].corr(df['likes'])
         corr_matrix
```

```
Out[68]: 0.8491785476230506
```

```
In [62]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```