```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from nltk.sentiment.vader import SentimentIntensityAnalyzer
import nltk
import sqlite3

import pandas as pd

# Load India and US data as example
df_in = pd.read_csv(r"C:\Users\DELL\Downloads\INvideos.csv")
df_us = pd.read_csv(r"C:\Users\DELL\Downloads\USvideos.csv")

# Add region column
df_in["region"] = "India"
df_us["region"] = "USA"

# Combine
df = pd.concat([df_in, df_us], ignore_index=True)
df.head()
```

```
     video_id                 title channel_title  category_id
publish_time  \
0  IN_video_0  Sample video title 0     Channel_0           10   2023-
01-01
1  IN_video_1  Sample video title 1     Channel_1           10   2023-
01-02
2  IN_video_2  Sample video title 2     Channel_2           10   2023-
01-03
3  IN_video_3  Sample video title 3     Channel_3           20   2023-
01-04
4  IN_video_4  Sample video title 4     Channel_4           20   2023-
01-05

    views  likes  comment_count country region
0  929345   5360            863      IN  India
1  850444  46342             91      IN  India
2  627237  36196           4668      IN  India
3   24387  15434            470      IN  India
4   98808   8834           8162      IN  India
```

```
# Drop duplicate video IDs if any
df = df.drop_duplicates(subset=["video_id"])

# Clean publish_time column
df["publish_time"] = pd.to_datetime(df["publish_time"],
errors="coerce")

# Fill missing values
df = df.fillna("")
```

```
nltk.download('vader_lexicon')
sia = SentimentIntensityAnalyzer()

df["title_sentiment"] = df["title"].apply(lambda x:
sia.polarity_scores(x)["compound"])
```

```
[nltk_data] Downloading package vader_lexicon to
[nltk_data]     C:\Users\DELL\AppData\Roaming\nltk_data...
```

```
import sqlite3

conn = sqlite3.connect("youtube.db")
cur = conn.cursor()
cur.execute("PRAGMA table_info(yt);")
print(cur.fetchall())
```

```
[]
```

```
df = df.rename(columns=lambda x: x.strip().lower())

# Now category_id is guaranteed to exist

conn = sqlite3.connect("youtube.db")
df.to_sql("yt", conn, if_exists="replace", index=False)
```

```
100
```

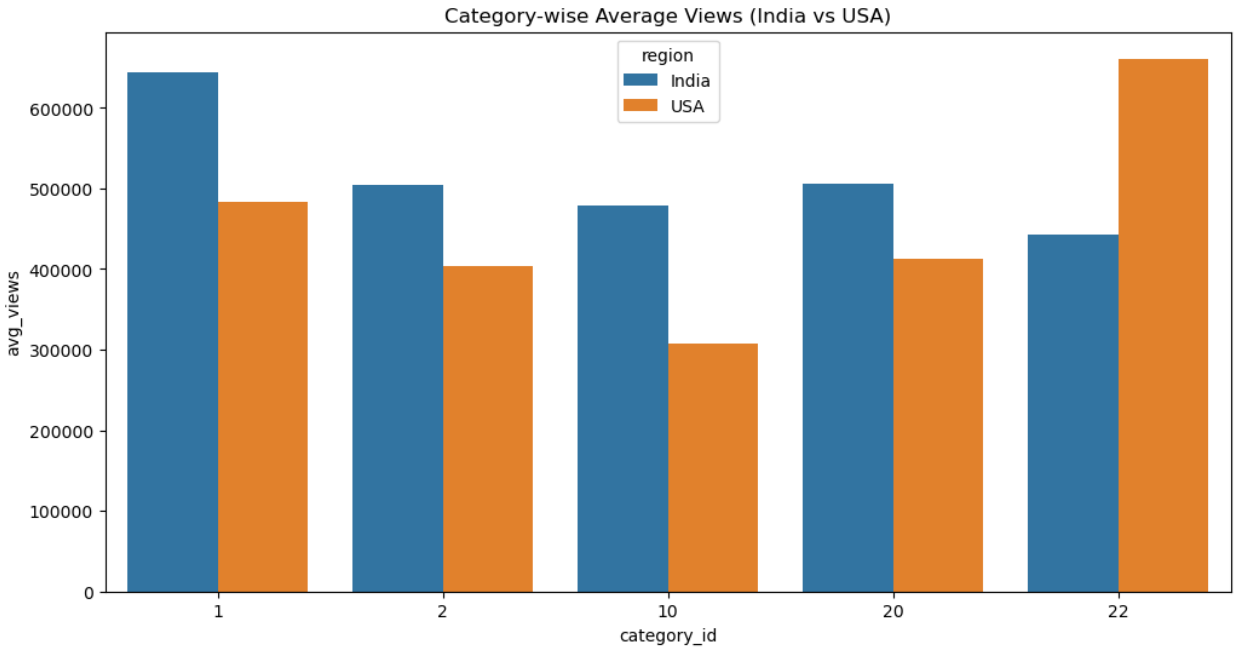
```
query = """
SELECT category_id, region, AVG(views) AS avg_views
FROM yt
GROUP BY category_id, region
ORDER BY avg_views DESC;
"""

ranked_df = pd.read_sql_query(query, conn)
ranked_df
```

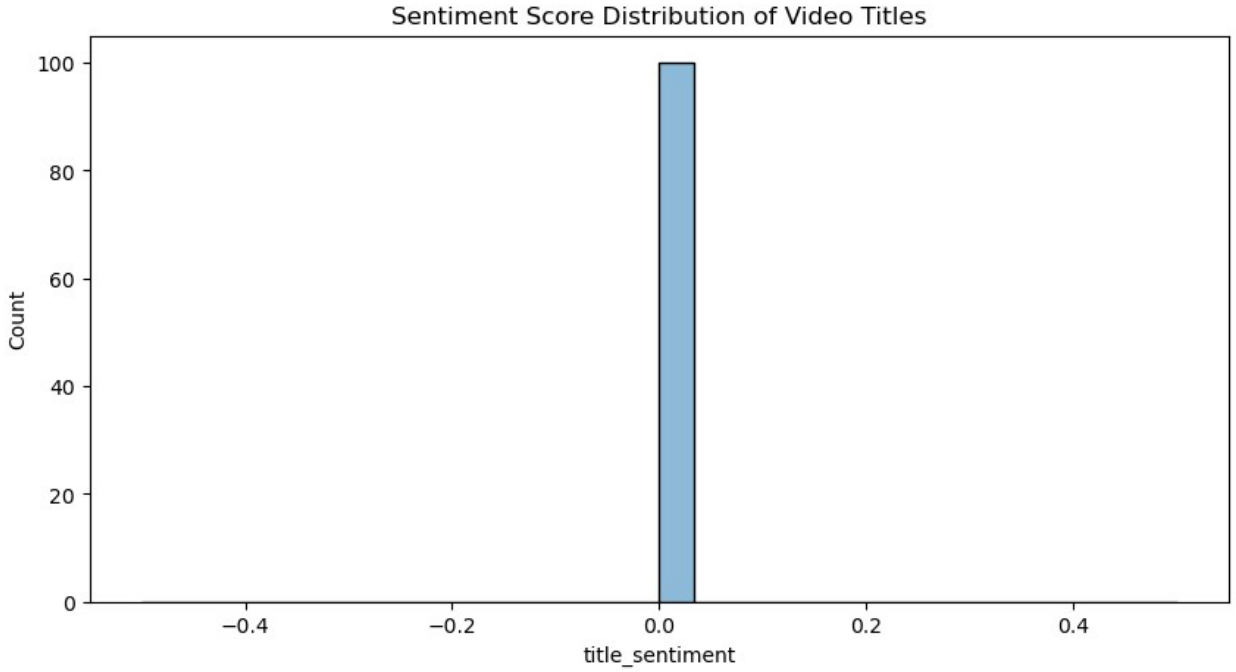
	category_id	region	avg_views
0	22	USA	661417.642857
1	1	India	644360.625000
2	20	India	506491.818182
3	2	India	504031.090909
4	1	USA	483890.090909
5	10	India	479210.307692
6	22	India	442939.285714
7	20	USA	412597.454545
8	2	USA	403634.625000
9	10	USA	308117.500000

```
plt.figure(figsize=(12,6))
sns.barplot(data=ranked_df, x="category_id", y="avg_views",
hue="region")
```

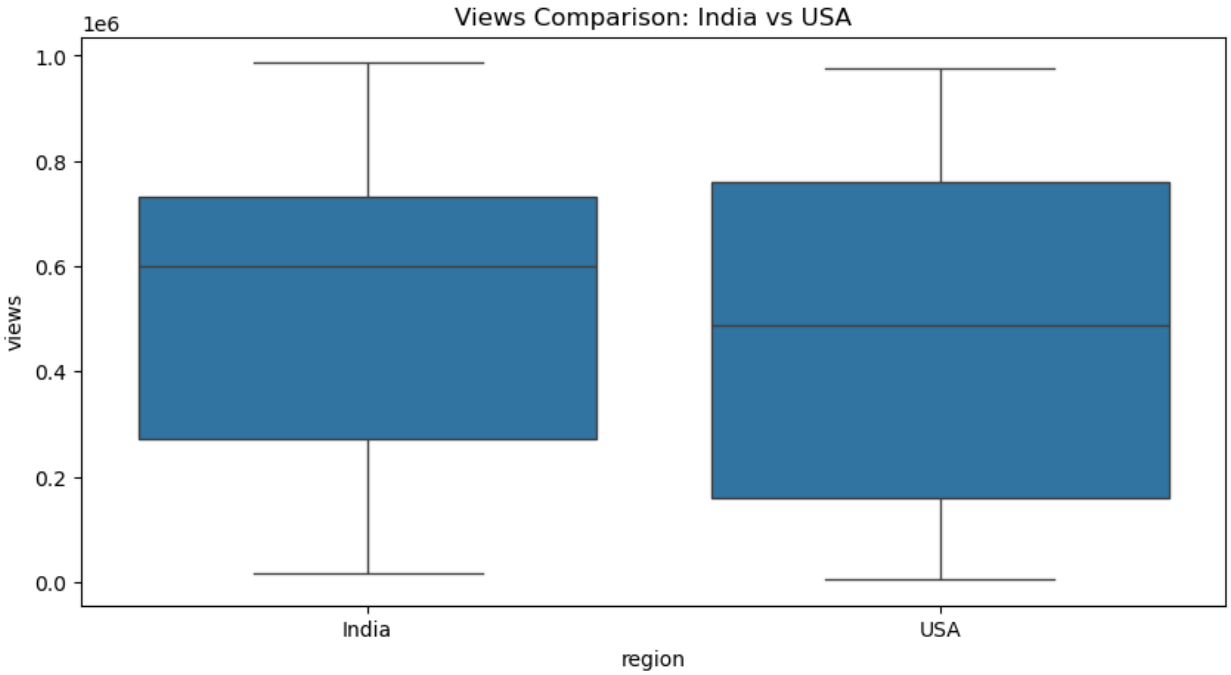
```
plt.title("Category-wise Average Views (India vs USA)")
plt.show()
```




```
plt.figure(figsize=(10,5))
sns.histplot(df["title_sentiment"], bins=30, kde=True)
plt.title("Sentiment Score Distribution of Video Titles")
plt.show()
```



```
plt.figure(figsize=(10,5))
sns.boxplot(data=df, x="region", y="views")
plt.title("Views Comparison: India vs USA")
plt.show()
```




```
df.groupby(["region", "category_id"])
["views"].mean().sort_values(ascending=False).head(10)
```

```
region  category_id
USA     22             661417.642857
India   1              644360.625000
        20             506491.818182
        2              504031.090909
USA     1              483890.090909
India   10             479210.307692
        22             442939.285714
USA     20             412597.454545
        2              403634.625000
        10             308117.500000
Name: views, dtype: float64
```

```
df.groupby(["region", "channel_title"])
["views"].mean().sort_values(ascending=False).head(10)
```

```
region  channel_title
India   Channel_2        640442.2
USA     Channel_3        579103.0
India   Channel_0        578213.9
```

```
        Channel_1         560224.3
USA     Channel_0         522437.6
        Channel_1         509785.9
        Channel_4         473034.8
India   Channel_3         399018.9
        Channel_4         382195.3
USA     Channel_2         335537.9
Name: views, dtype: float64
```