In [127…
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
```

In [128…
```
df = pd.read_csv('mymoviedb.csv', lineterminator = '\n')
```

In [129…
```
df.head(5)
```

Out[129]:

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average	Original_Language	Genre	Poster_Url
0	2021-12-15	Spider-Man: No Way Home	Peter Parker is unmasked and no longer able to...	5083.954	8940	8.3	en	Action, Adventure, Science Fiction	https://image.tmdb.org/t/p/original/1g0dhYtq4i...
1	2022-03-01	The Batman	In his second year of fighting crime, Batman u...	3827.658	1151	8.1	en	Crime, Mystery, Thriller	https://image.tmdb.org/t/p/original/74xTEgt7R3...
2	2022-02-25	No Exit	Stranded at a rest stop in the mountains durin...	2618.087	122	6.3	en	Thriller	https://image.tmdb.org/t/p/original/vDHsLnOWKl...
3	2021-11-24	Encanto	The tale of an extraordinary family, the Madri...	2402.201	5076	7.7	en	Animation, Comedy, Family, Fantasy	https://image.tmdb.org/t/p/original/4j0PNHkMr5...
4	2021-12-22	The King's Man	As a collection of history's worst tyrants and...	1895.511	1793	7.0	en	Action, Adventure, Thriller, War	https://image.tmdb.org/t/p/original/aq4Pwv5Xeu...

Cleaning and Preprocessing

In [130…
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9827 entries, 0 to 9826
Data columns (total 9 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   Release_Date       9827 non-null   object
 1   Title              9827 non-null   object
 2   Overview           9827 non-null   object
 3   Popularity         9827 non-null   float64
 4   Vote_Count         9827 non-null   int64
 5   Vote_Average       9827 non-null   float64
 6   Original_Language  9827 non-null   object
 7   Genre              9827 non-null   object
 8   Poster_Url         9827 non-null   object
dtypes: float64(2), int64(1), object(6)
memory usage: 691.1+ KB
```

In [131…
```
df[df.duplicated()].sum()
```

Out[131]:
```
Release_Date         0.0
Title                0.0
Overview             0.0
Popularity           0.0
Vote_Count           0.0
Vote_Average         0.0
Original_Language    0.0
Genre                0.0
Poster_Url           0.0
dtype: float64
```

In [132…
```
df.Genre
```

Out[132]:
```
0       Action, Adventure, Science Fiction
1                 Crime, Mystery, Thriller
2                                 Thriller
3       Animation, Comedy, Family, Fantasy
4         Action, Adventure, Thriller, War
                       ...
9822                          Drama, Crime
9823                                Horror
9824             Mystery, Thriller, Horror
9825                 Music, Drama, History
9826          War, Drama, Science Fiction
Name: Genre, Length: 9827, dtype: object
```

In [133…
```
df.describe()
```

Out[133]:

	Popularity	Vote_Count	Vote_Average
count	9827.000000	9827.000000	9827.000000
mean	40.326088	1392.805536	6.439534
std	108.873998	2611.206907	1.129759
min	13.354000	0.000000	0.000000
25%	16.128500	146.000000	5.900000
50%	21.199000	444.000000	6.500000
75%	35.191500	1376.000000	7.100000
max	5083.954000	31077.000000	10.000000

Cleaning information

1. Release_Date datatype is object
2. Drop Poster_Url, Overview, Original_language Columns
3. Blank spaces in Genre Column
4. Convert Vote_avg to categorical column

In [134…
```
df['Release_Date'] = pd.to_datetime(df['Release_Date'])
```

In [135…
```
df['Release_Date'] = df['Release_Date'].dt.year
```

In [136…
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9827 entries, 0 to 9826
Data columns (total 9 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   Release_Date       9827 non-null   int64
 1   Title              9827 non-null   object
 2   Overview           9827 non-null   object
 3   Popularity         9827 non-null   float64
 4   Vote_Count         9827 non-null   int64
 5   Vote_Average       9827 non-null   float64
 6   Original_Language  9827 non-null   object
 7   Genre              9827 non-null   object
 8   Poster_Url         9827 non-null   object
dtypes: float64(2), int64(2), object(5)
memory usage: 691.1+ KB
```

Release_Date converted to Year

In [137…
```
cols = ['Overview','Original_Language', 'Poster_Url']
```

In [138…
```
df.drop(cols, axis = 1, inplace = True)
```

In [139…
```
df.head(5)
```

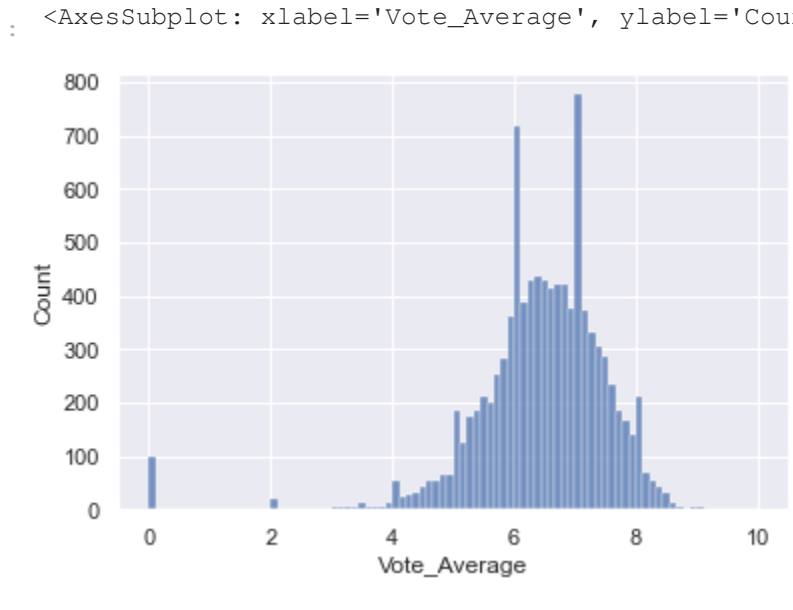
Out[139]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	8.3	Action, Adventure, Science Fiction
1	2022	The Batman	3827.658	1151	8.1	Crime, Mystery, Thriller
2	2022	No Exit	2618.087	122	6.3	Thriller
3	2021	Encanto	2402.201	5076	7.7	Animation, Comedy, Family, Fantasy
4	2021	The King's Man	1895.511	1793	7.0	Action, Adventure, Thriller, War

Dropped unnecessary columns

In [140…
```
sns.histplot(df['Vote_Average'])
```

Out[140]:
```
<AxesSubplot: xlabel='Vote_Average', ylabel='Count'>
```



Converting these values into popular, avg, below avg, not popular

In [141…
```
def convert(vote):
    if vote >= 8.0:
        return 'Popular'
    elif vote > 6.0:
        return 'Avg'
    elif vote > 4.0:
        return 'Below_Avg'
    else :
        return 'Not_Popular'
```

In [142…
```
df['Vote_Average'] = df['Vote_Average'].apply(convert)
```

In [143…
```
df.head()
```

Out[143]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action, Adventure, Science Fiction
1	2022	The Batman	3827.658	1151	Popular	Crime, Mystery, Thriller
2	2022	No Exit	2618.087	122	Avg	Thriller
3	2021	Encanto	2402.201	5076	Avg	Animation, Comedy, Family, Fantasy
4	2021	The King's Man	1895.511	1793	Avg	Action, Adventure, Thriller, War

In [144…
```
df.Vote_Average.value_counts()
```

Out[144]:
```
Avg            6481
Below_Avg      2705
Popular         436
Not_Popular     205
Name: Vote_Average, dtype: int64
```

Vote_Average converted into Categorical Column

In [145…
```
df.Vote_Average.unique()
```

Out[145]:
```
array(['Popular', 'Avg', 'Below_Avg', 'Not_Popular'], dtype=object)
```

In [146…
```
df['Genre'] = df['Genre'].str.split(', ')
df = df.explode('Genre').reset_index(drop = True)
df
```

Out[146]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action
1	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Adventure
2	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Science Fiction
3	2022	The Batman	3827.658	1151	Popular	Crime
4	2022	The Batman	3827.658	1151	Popular	Mystery
...	...	...	...	...	...	...
25788	2021	The United States vs. Billie Holiday	13.354	152	Avg	Drama
25789	2021	The United States vs. Billie Holiday	13.354	152	Avg	History
25790	1984	Threads	13.354	186	Avg	War
25791	1984	Threads	13.354	186	Avg	Drama
25792	1984	Threads	13.354	186	Avg	Science Fiction

25793 rows × 6 columns

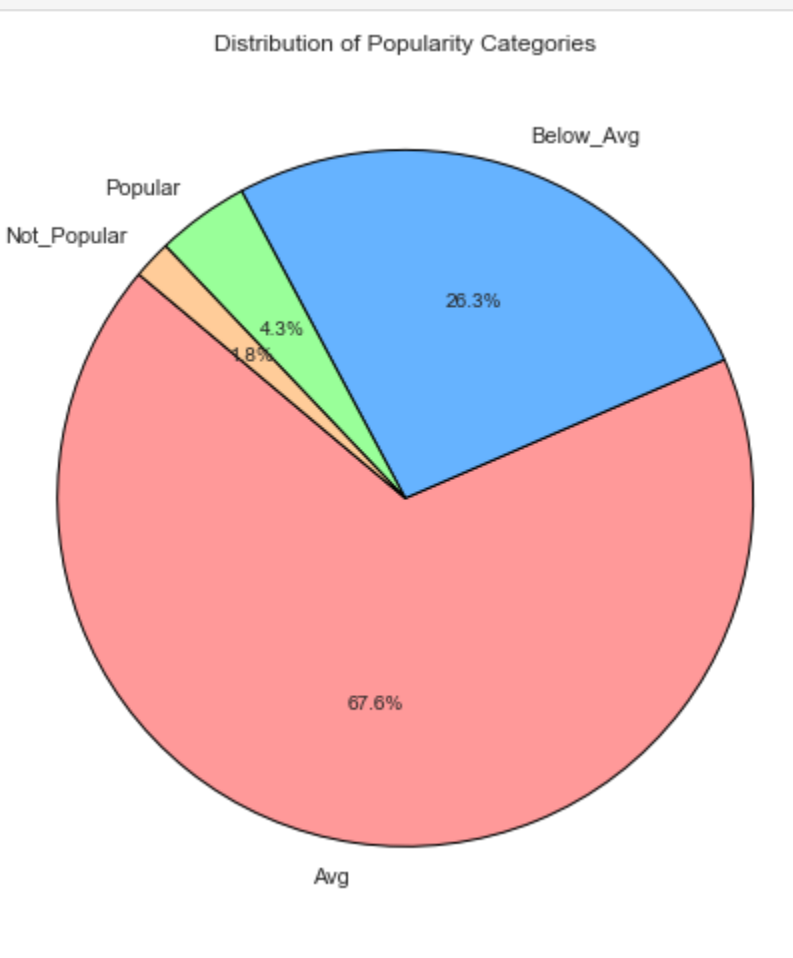
In [70]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 25793 entries, 0 to 25792
Data columns (total 6 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Release_Date   25793 non-null  int64
 1   Title          25793 non-null  object
 2   Popularity     25793 non-null  float64
 3   Vote_Count     25793 non-null  int64
 4   Vote_Average   25793 non-null  object
 5   Genre          25793 non-null  object
dtypes: float64(1), int64(2), object(3)
memory usage: 1.2+ MB
```

Finding Trends using Visualization

1. Distribution of Popularity

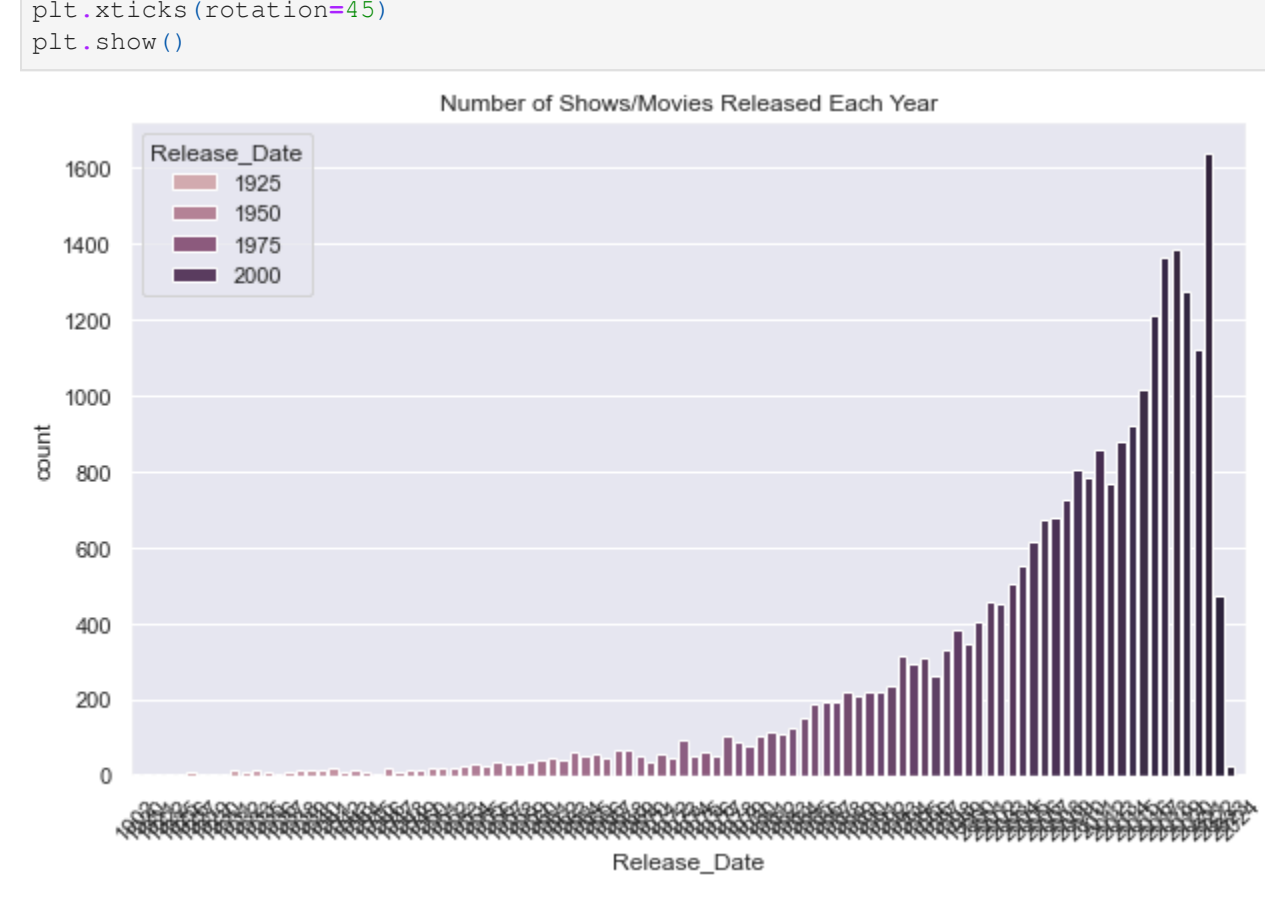
In [187…
```
plt.figure(figsize=(8, 8))
plt.pie(df['Vote_Average'].value_counts(), labels=popularity_counts.index, autopct='%1.1f%%',
        colors=['#ff9999','#66b3ff','#99ff99','#ffcc99'], startangle=140, wedgeprops={'edgecolor': 'black'})
plt.title("Distribution of Popularity Categories")
plt.show()
```



Most Netflix movies have average popularity (67.6%), while a significant number are below average (26.3%). Only a small percentage (4.3%) are highly popular, and very few (1.8%) are not popular at all. This shows that most films get moderate attention, but only a few become big hits.

2. Year with most films released

In [114…
```
plt.figure(figsize=(10, 6))
sns.countplot(x="Release_Date", data=df, hue = "Release_Date", order=sorted(df["Release_Date"].unique()))
plt.title("Number of Shows/Movies Released Each Year")`
plt.xticks(rotation=45)
plt.show()
```



In [147…
```
df['Release_Date'].value_counts().sort_values(ascending = False).head(1)
```

Out[147]:
```
2021    1638
Name: Release_Date, dtype: int64
```

3. Most films made on specific Genre

In [111…
```
df['Genre'].value_counts()`
```

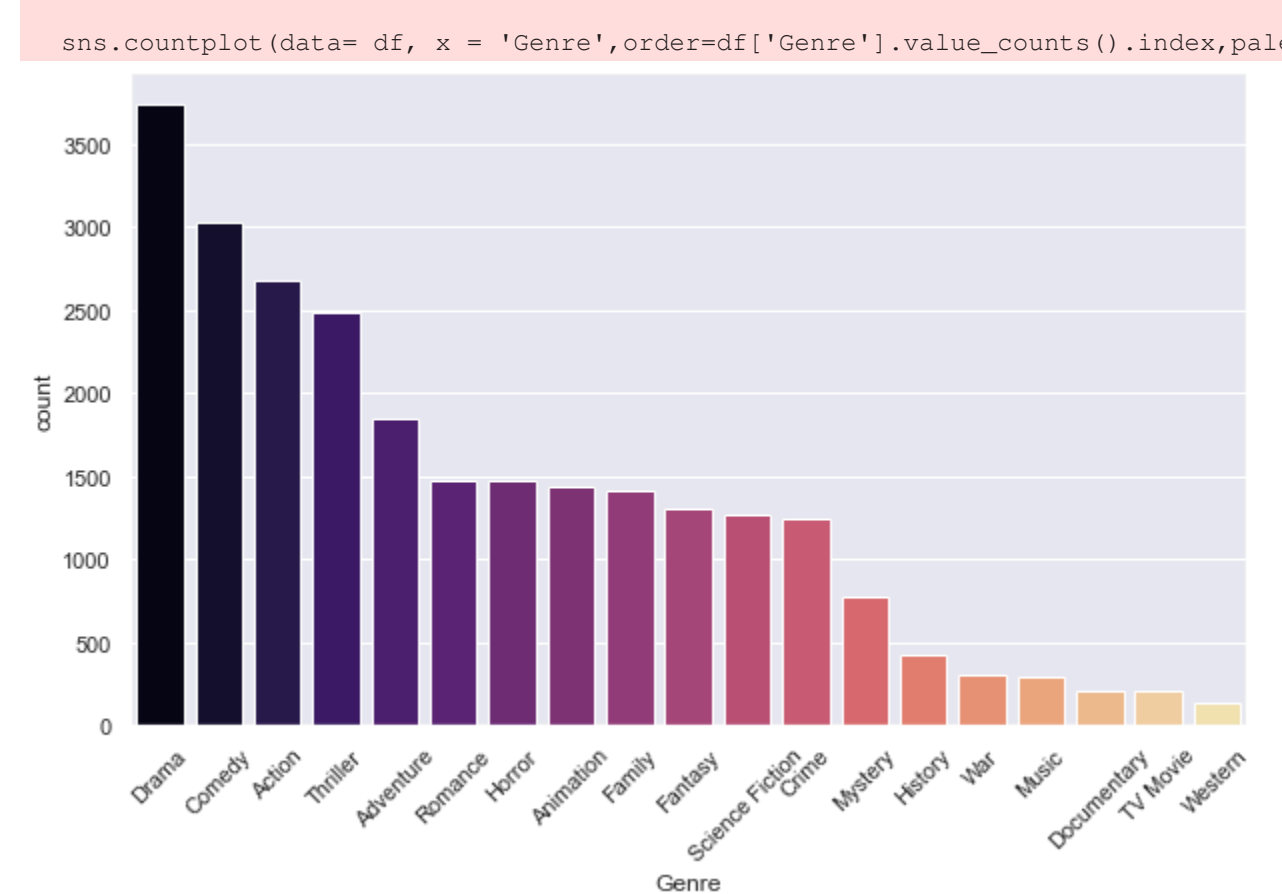
Out[111]:
```
Drama              3744
Comedy             3031
Action             2686
Thriller           2488
Adventure          1853
Romance            1476
Horror             1470
Animation          1439
Family             1414
Fantasy            1308
Science Fiction    1273
Crime              1242
Mystery             773
History             427
War                 308
Music               295
Documentary         215
TV Movie            214
Western             137
Name: Genre, dtype: int64
```

In [148…
```
plt.figure(figsize=(10, 6))
sns.countplot(data= df, x = 'Genre',order=df['Genre'].value_counts().index,palette="magma" )
plt.xticks(rotation=45)
plt.show()
```

```
C:\Users\Yash Mahajan\AppData\Local\Temp\ipykernel_13200\3481694672.py:2: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the same effect.

  sns.countplot(data= df, x = 'Genre',order=df['Genre'].value_counts().index,palette="magma" )
```

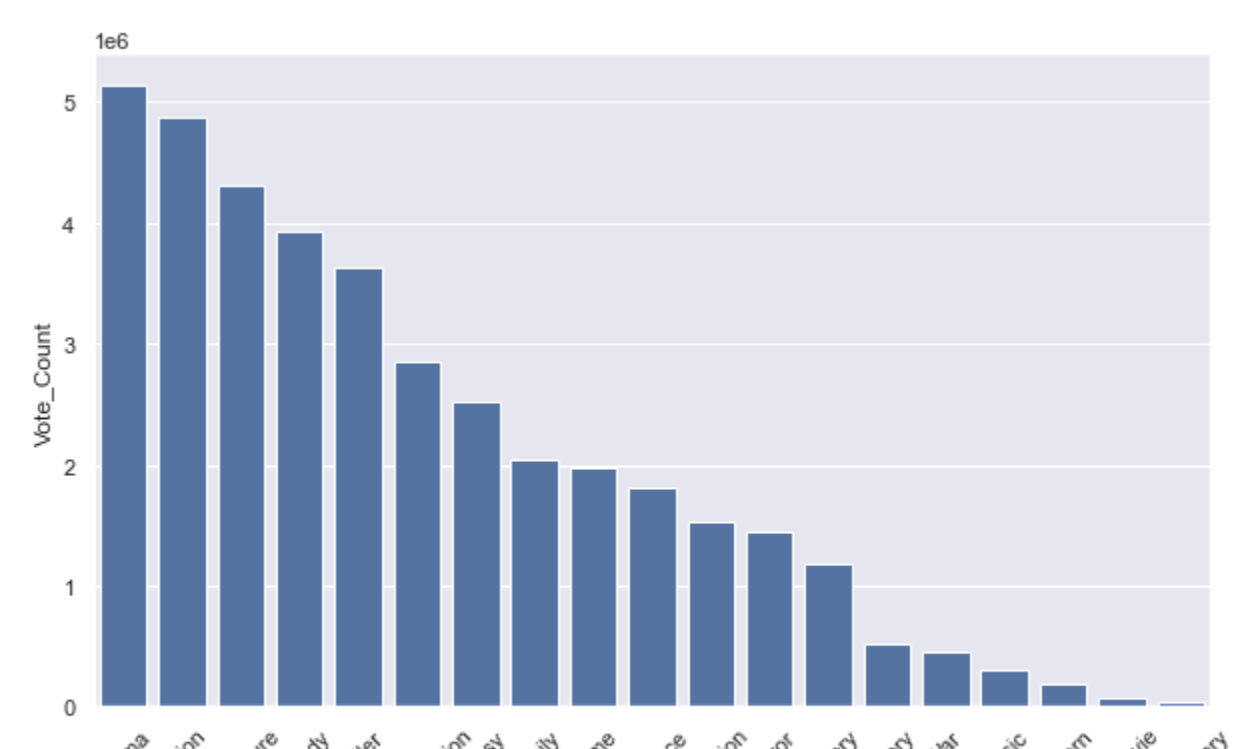


4. Genre with highest vote

In [149…
```
highestvote = df.groupby('Genre')['Vote_Count'].sum().reset_index().sort_values(by = 'Vote_Count', ascending = False)
```

In [152…
```
plt.figure(figsize=(10, 6))
sns.barplot(data = highestvote, x='Genre', y = 'Vote_Count' )
plt.xticks(rotation=45)
plt.show
```

Out[152]:
```
<function matplotlib.pyplot.show(close=None, block=None)>
```



5. Film With highest Popularity

In [153…
```
df.sort_values(by = 'Popularity' , ascending = False).head(1)
```

Out[153]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action

6. Film With lowest Popularity

In [160…
```
df[df['Popularity']==df['Popularity'].min()]
```

Out[160]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
25787	2021	The United States vs. Billie Holiday	13.354	152	Avg	Music
25788	2021	The United States vs. Billie Holiday	13.354	152	Avg	Drama
25789	2021	The United States vs. Billie Holiday	13.354	152	Avg	History
25790	1984	Threads	13.354	186	Avg	War
25791	1984	Threads	13.354	186	Avg	Drama
25792	1984	Threads	13.354	186	Avg	Science Fiction

Conclusion

1. Distribution of Popularity

Most Netflix movies have average popularity (67.6%), while a significant number are below average (26.3%). Only a small percentage (4.3%) are highly popular, and very few (1.8%) are not popular at all. This shows that most films get moderate attention, but only a few become big hits.

2. Year with most films releases

The highest number of films were released in 2021, with a total of 1,638. This suggests a peak in Netflix's content production, possibly influenced by post-pandemic content releases.

3. Most Common Movie Genres

Drama was the most frequently produced genre, followed by Comedy and Action. This aligns with audience preferences, as these genres tend to attract a broad viewership.

4. Genre with highest total votes

Drama also received the highest total votes, indicating strong audience engagement. This suggests that people not only watch but actively rate and discuss dramatic films.

5. Film With highest Popularity

Spider-Man: No Way Home had the highest popularity, likely due to its massive fanbase, franchise appeal, and extensive marketing.

6. Film With lowest Popularity

The United States vs. Billie Holiday and Threads had the least popularity, possibly due to their niche appeal or limited promotion.

In [ ]: